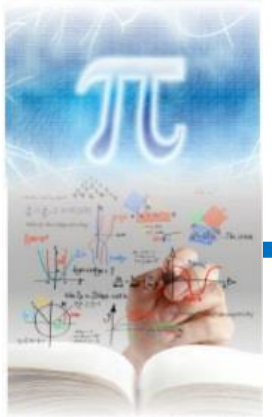
PITAGORAS
ACADEMIA

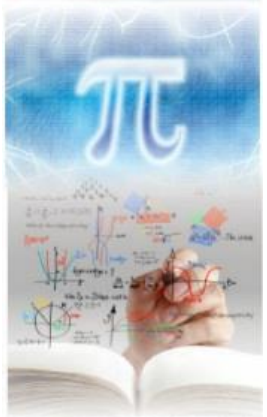
RAZONAMIENTO MATEMATICO

Profesor
Panchito Timana



HABILIDAD VISUAL

ANALISIS DE SOLIDOS



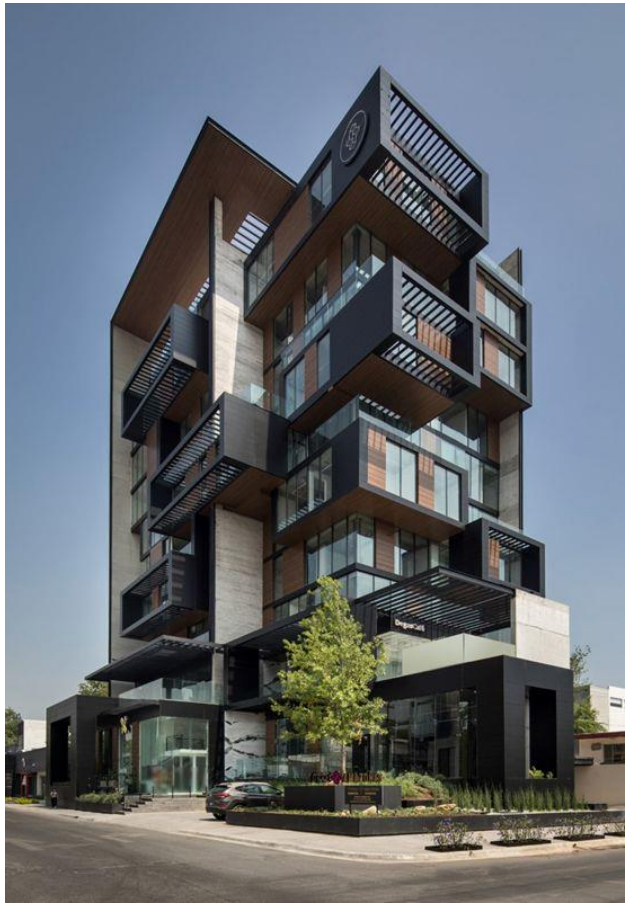
ANALISIS DE SOLIDOS

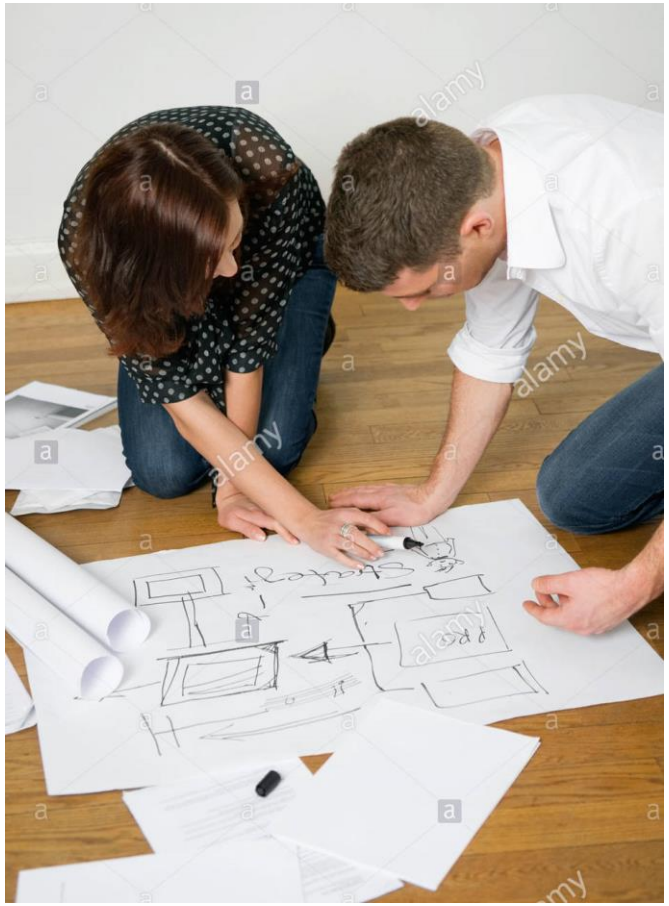
¿QUÉ ES EL RAZONAMIENTO ABSTRACTO

El razonamiento abstracto es la capacidad del estudiante para analizar principalmente de manera visual, las diferentes posiciones de figuras u objetos.

PITAGORAS ACADEMIA

ANALISIS DE SOLIDOS





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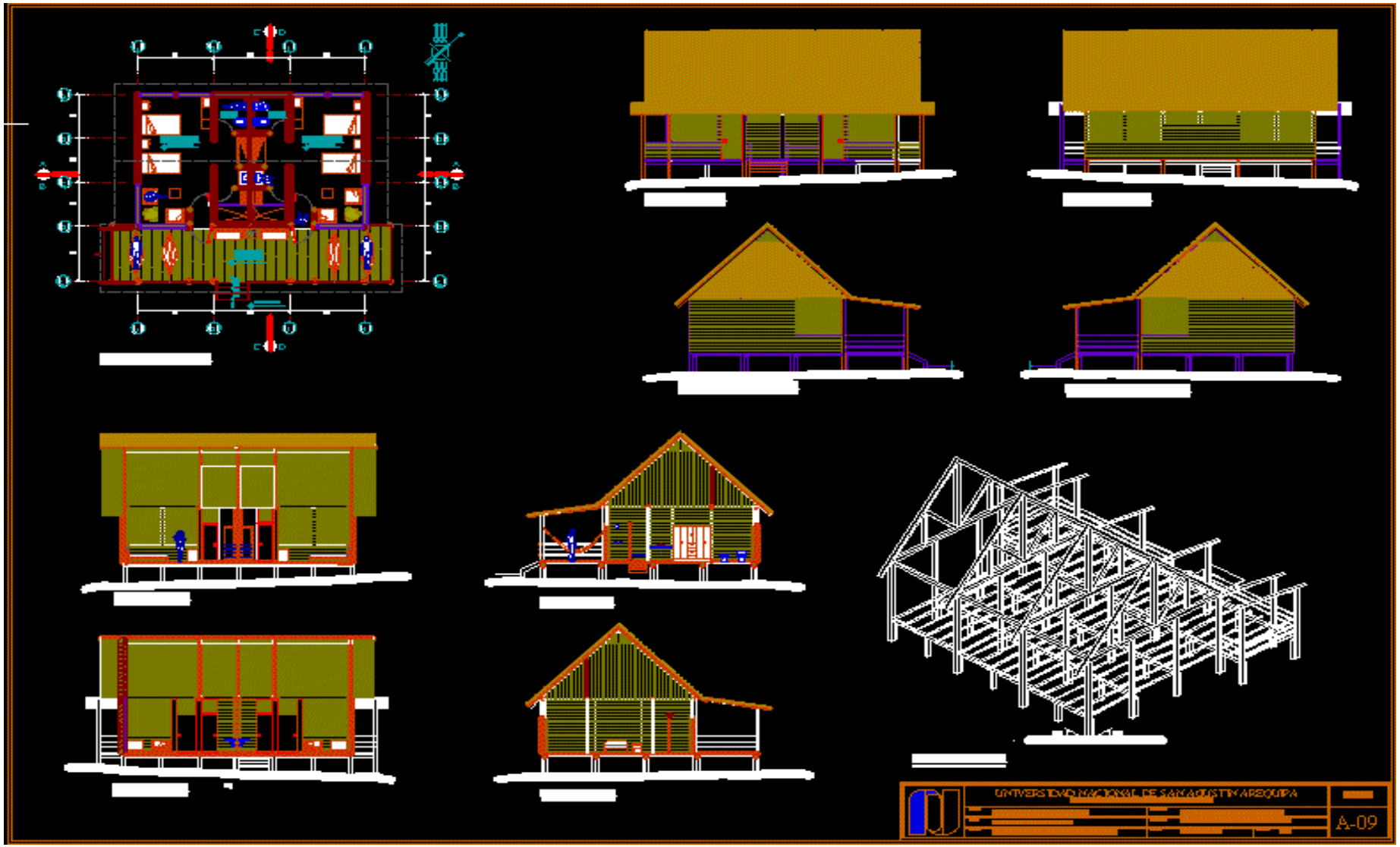
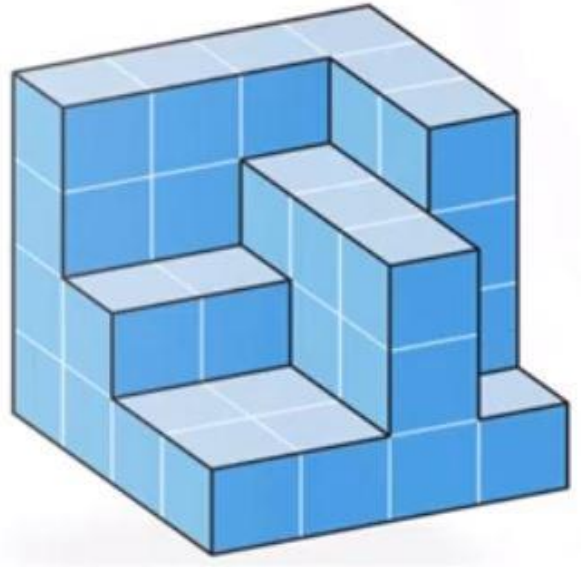
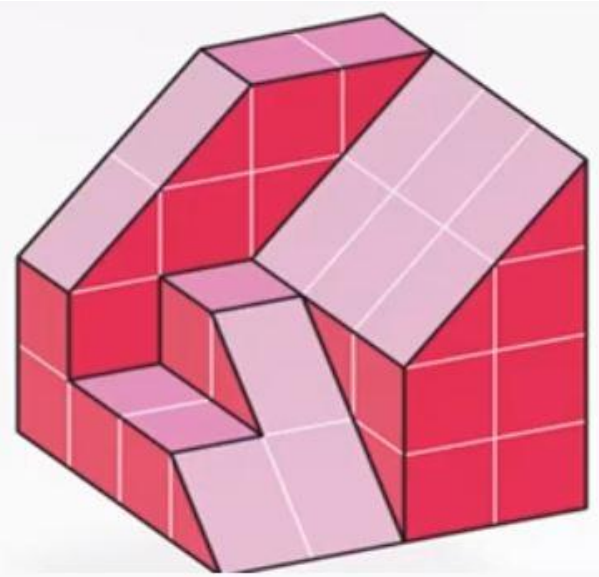
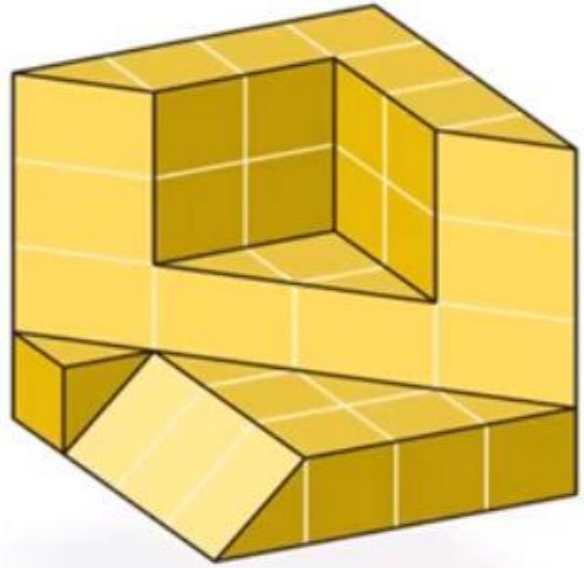
ANALISIS DE SOLIDOS

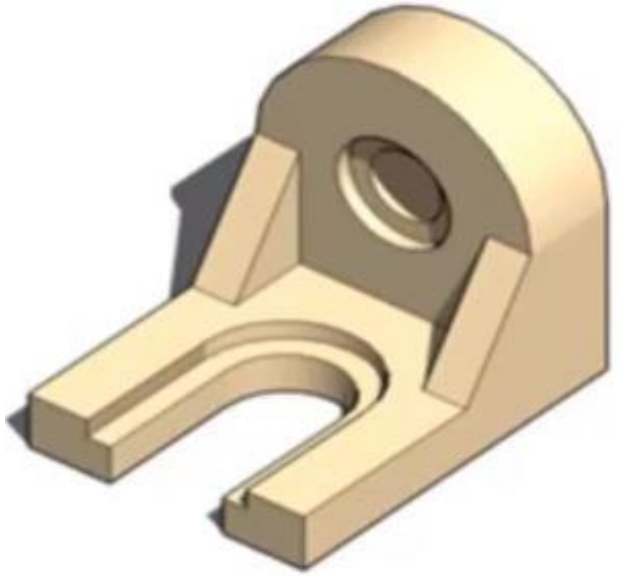


ANALISIS DE SOLIDOS





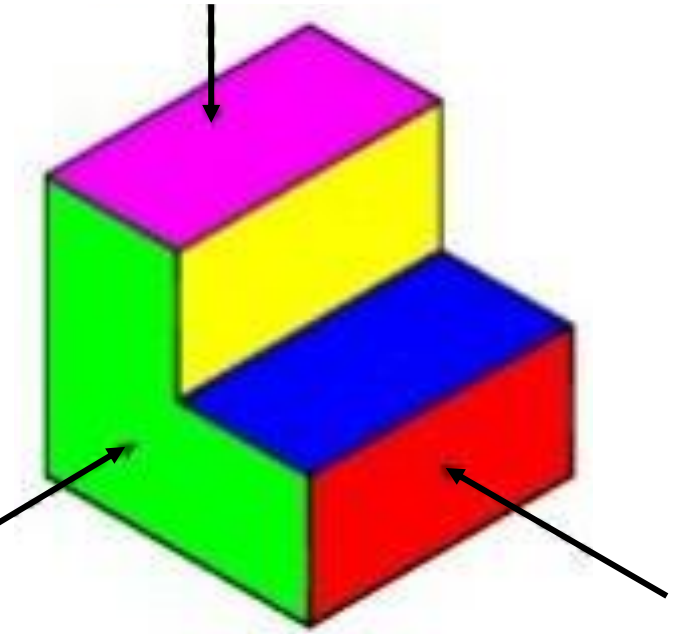




ANALISIS DE SOLIDOS

VISTAS DE UN SÓLIDO

Horizontal (H)



Frontal (F)

Perfil (P)

VISTA FRONTAL (F):

Es aquella que se determina cuando el observador está frente al sólido, también se llama vista de frente.

VISTA PERFIL (P):

Es aquella que se determina cuando el observador se encuentra al lado derecho del sólido, también se llama vista lateral

VISTA HORIZONTAL (H):

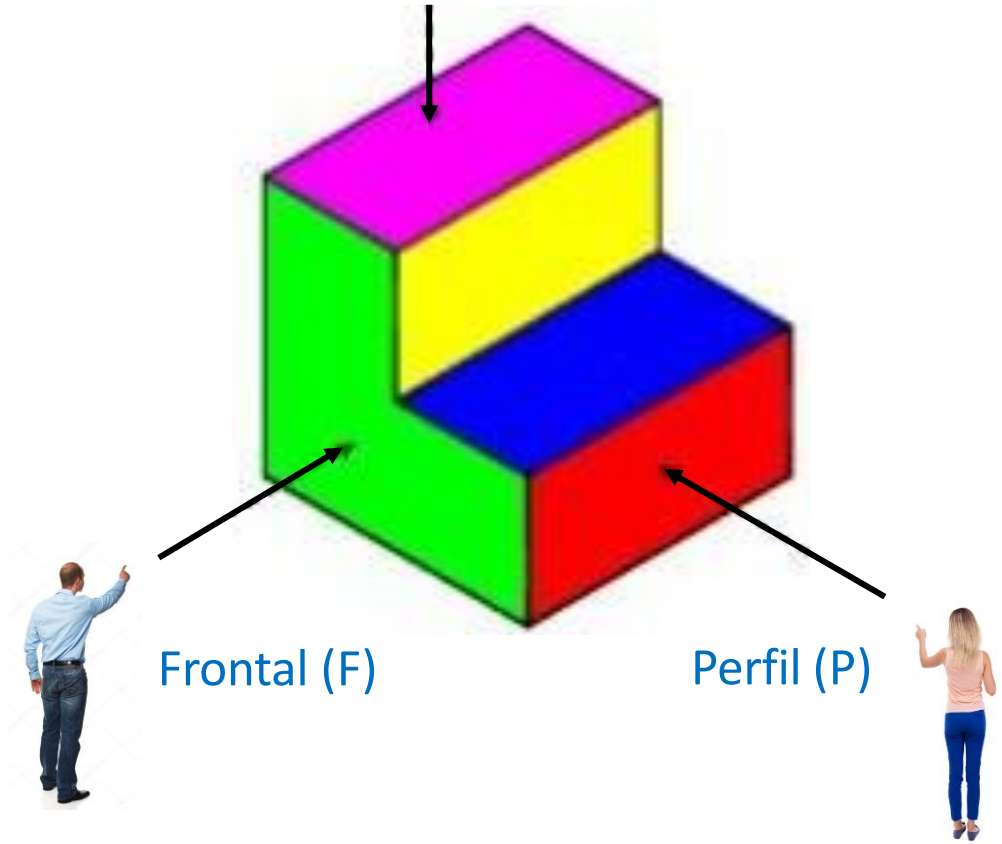
Es aquella que se determina cuando el observador está encima del sólido, también se llama vista superior o vista de planta

ANALISIS DE SOLIDOS

DEPURADO DE UN SÓLIDO

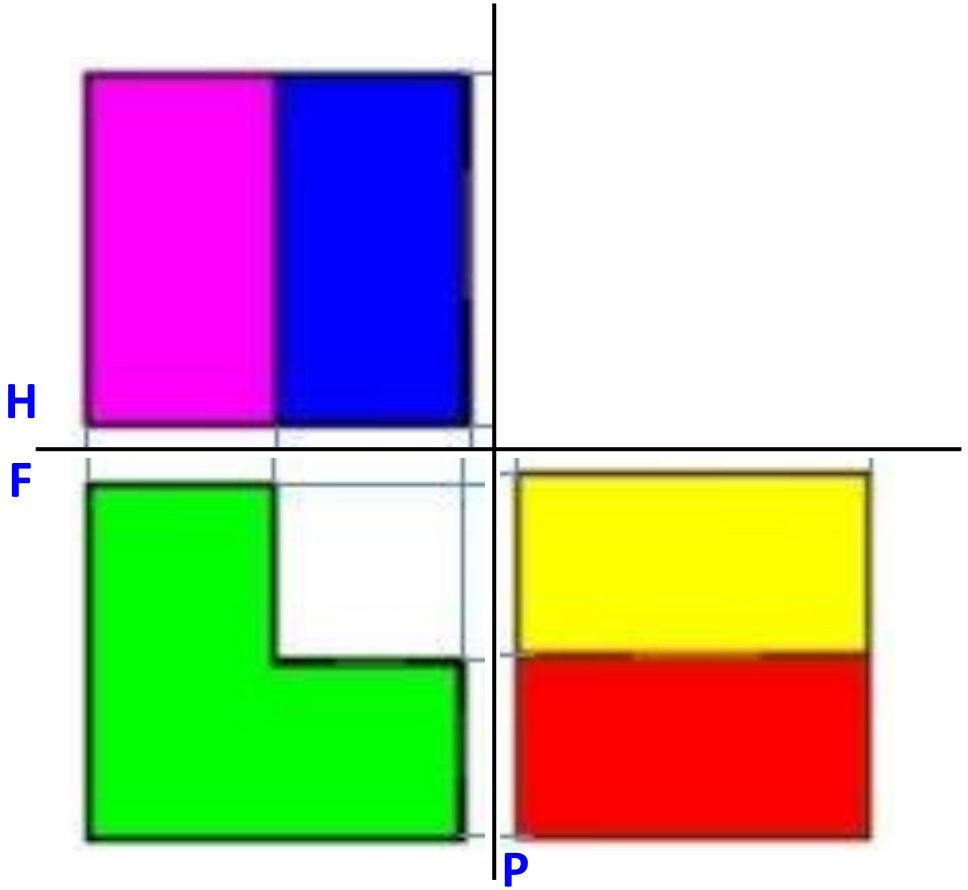
Se le denomina **depurado** a la representación de las tres **vistas** espaciales de un **sólido** en un solo plano.

Horizontal (H)



Frontal (F)

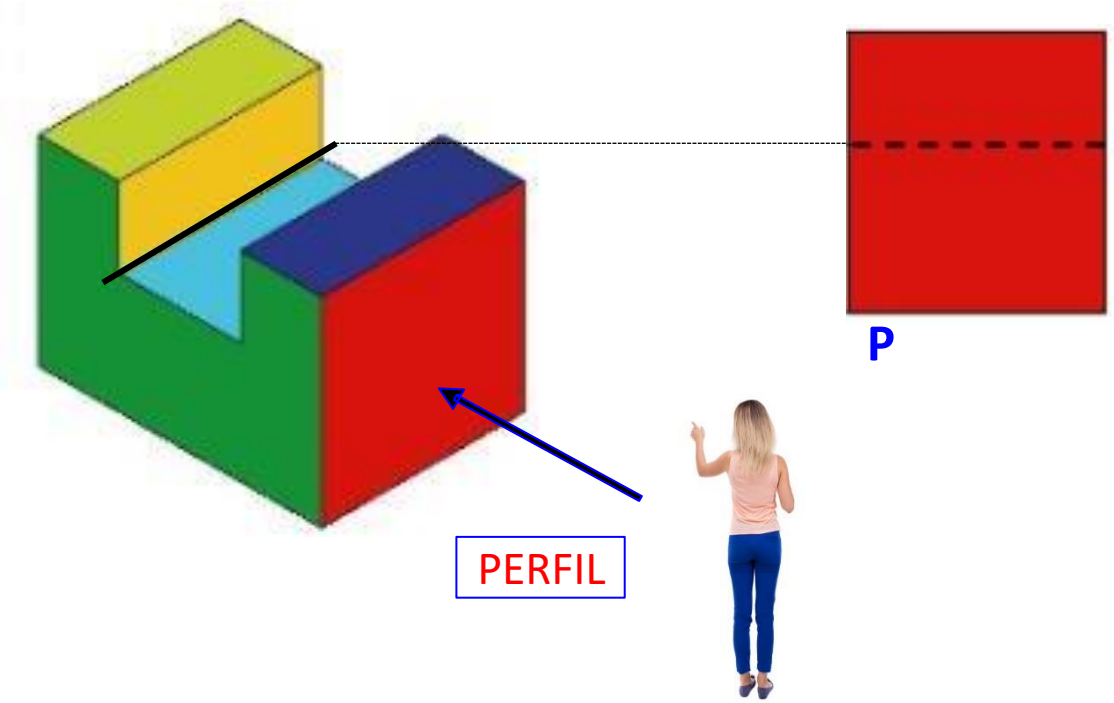
Perfil (P)

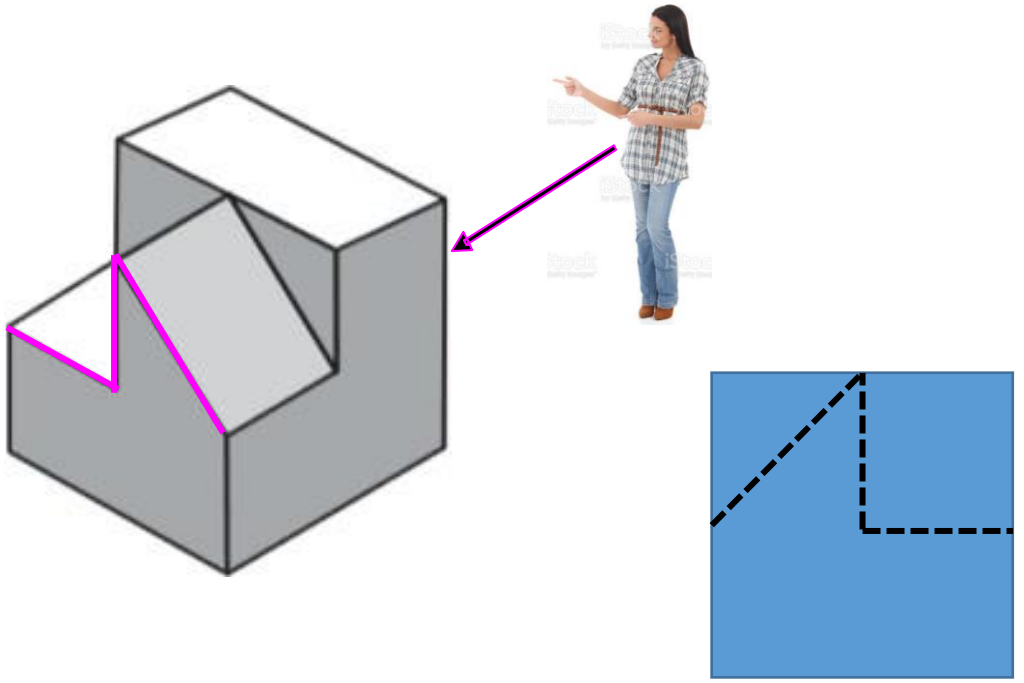


ANALISIS DE SOLIDOS

USO DE LAS LINEAS PUNTEADAS

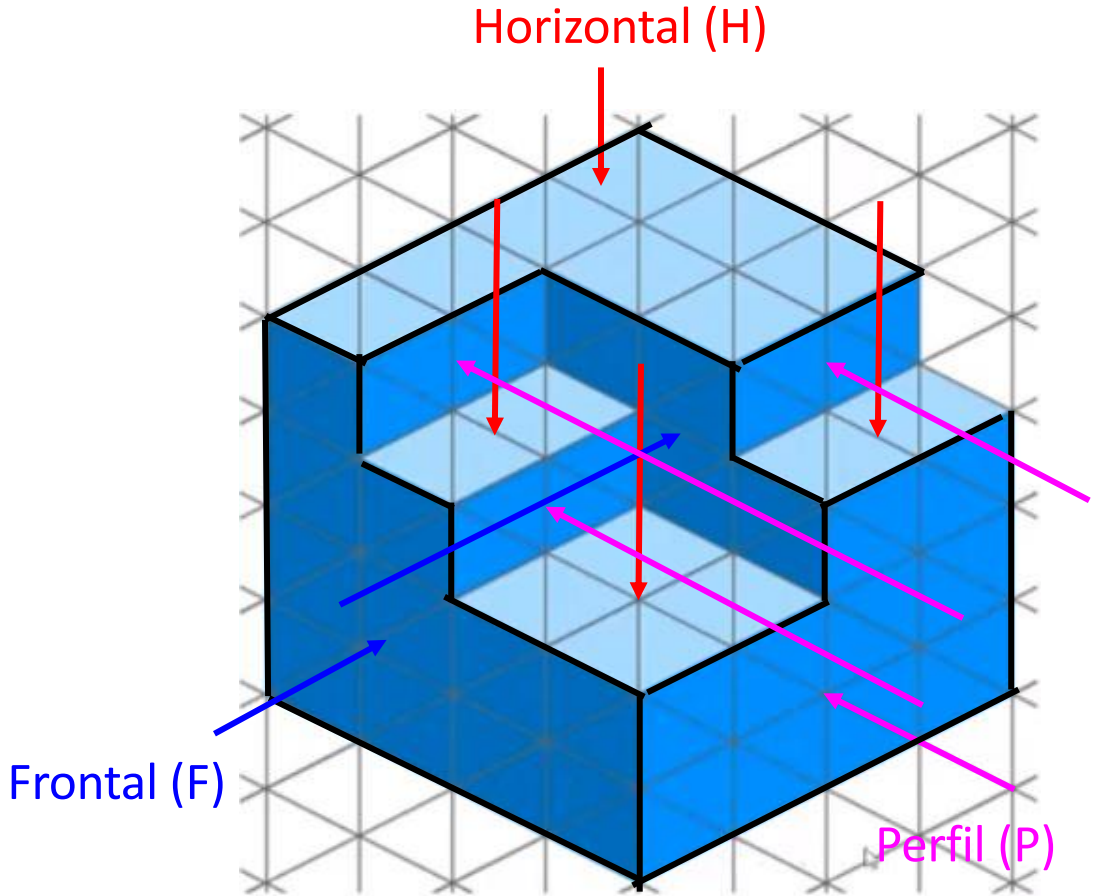
Las **líneas punteadas** se utilizan para poder representar **caras** que desde una posición se encuentran **ocultas**.

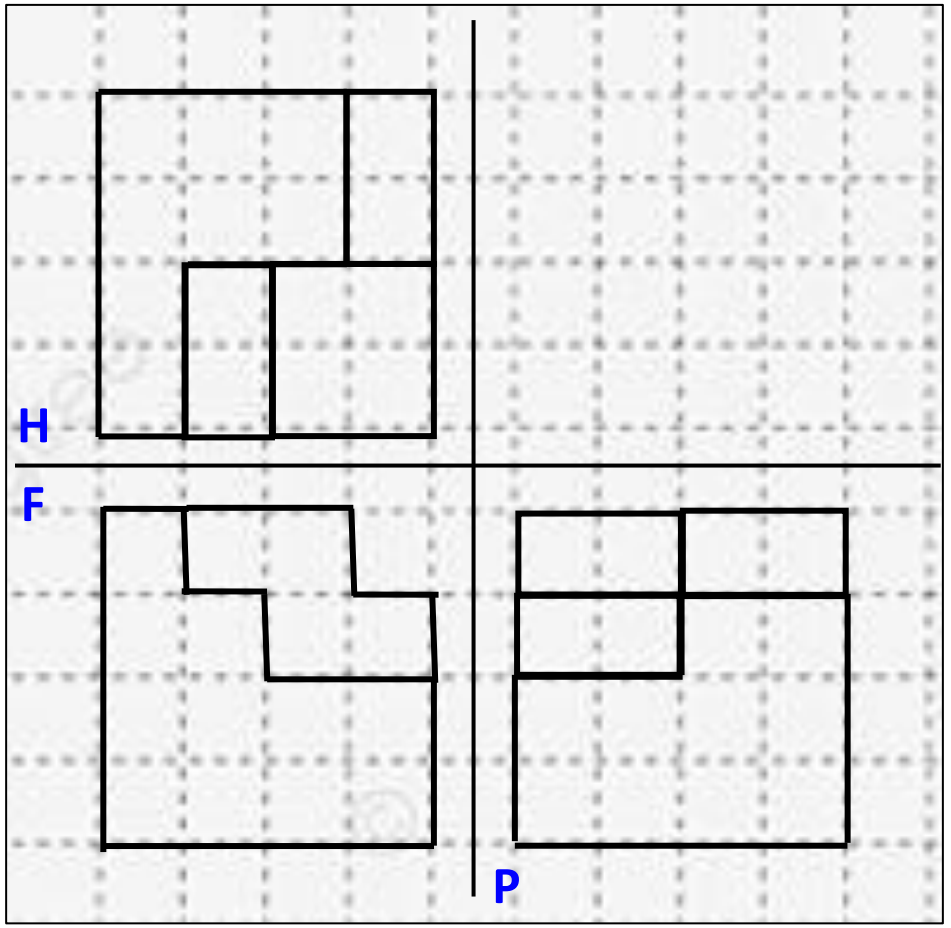




ANALISIS DE SOLIDOS

EJERCICIO N 01 Dibujar el DEPURADO del solido mostrado.





ANALISIS DE SOLIDOS

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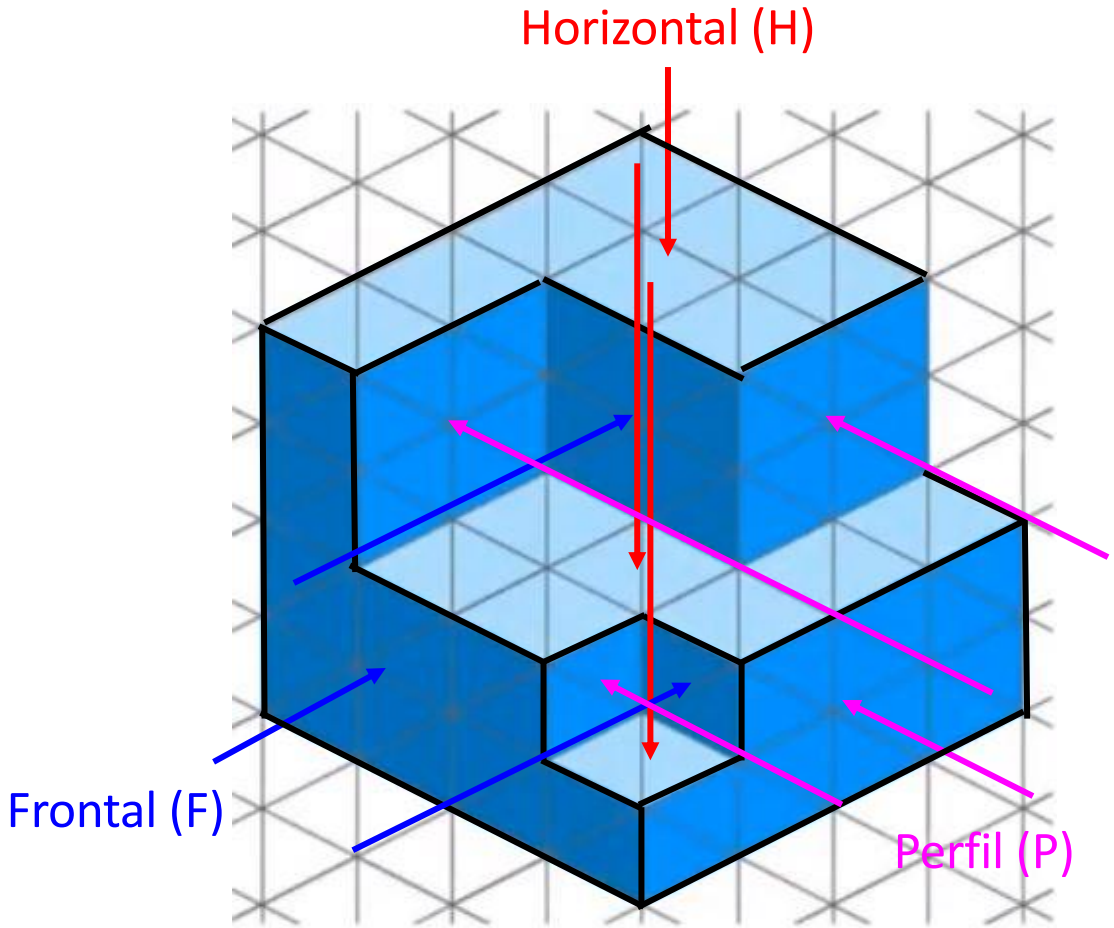
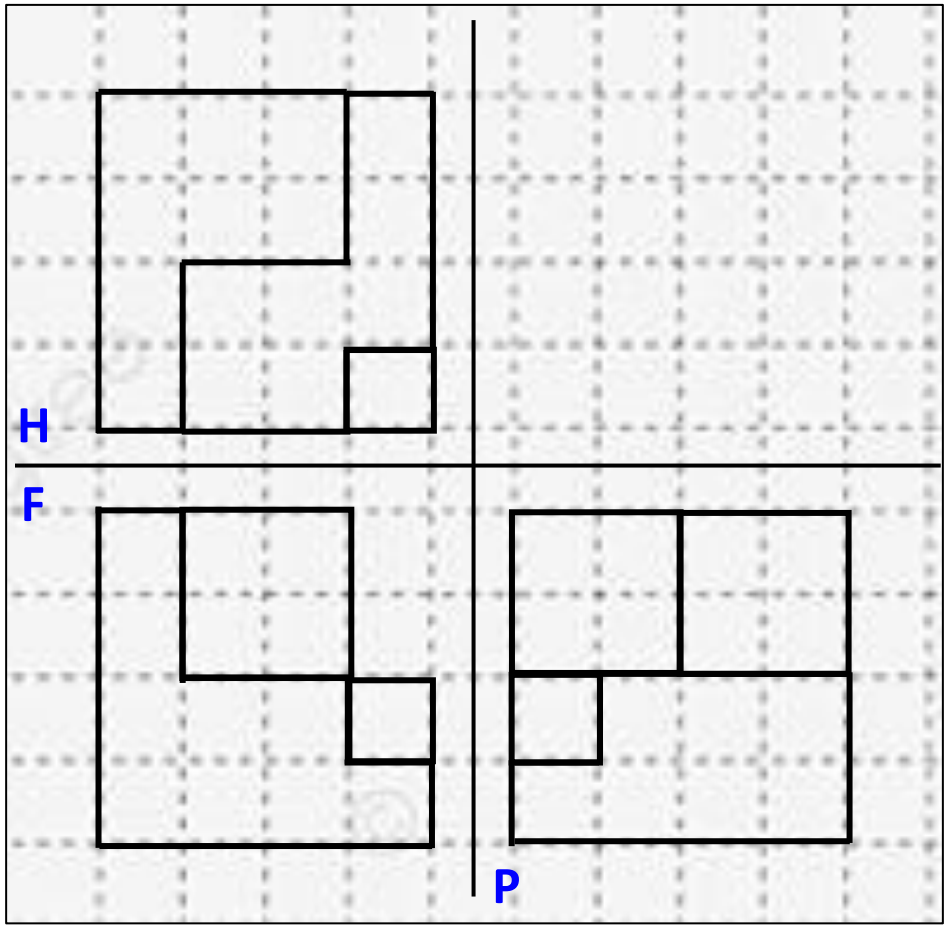
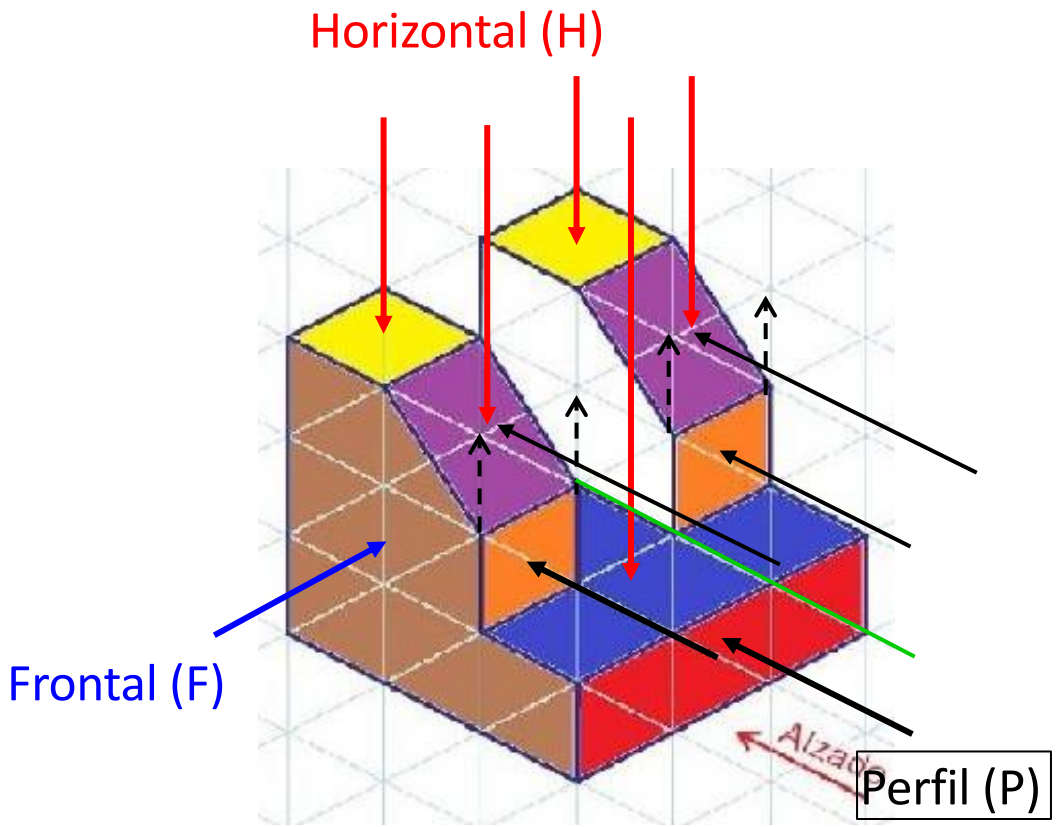
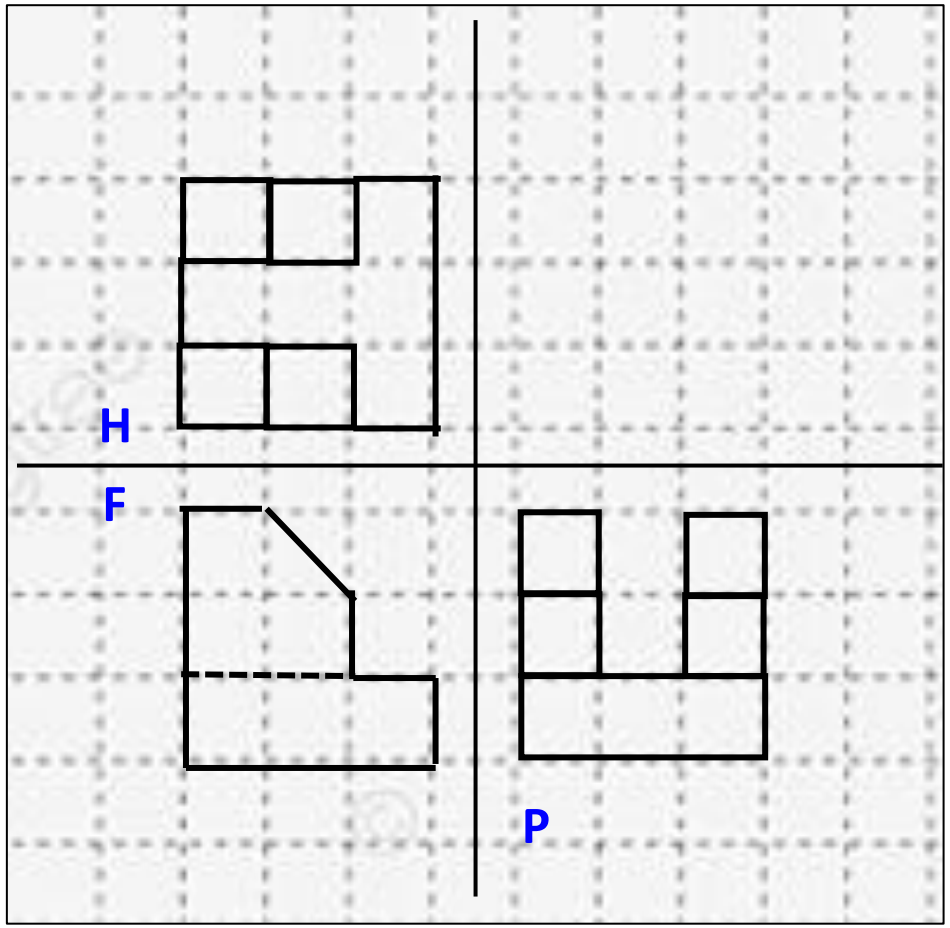




ANALISIS DE SOLIDOS

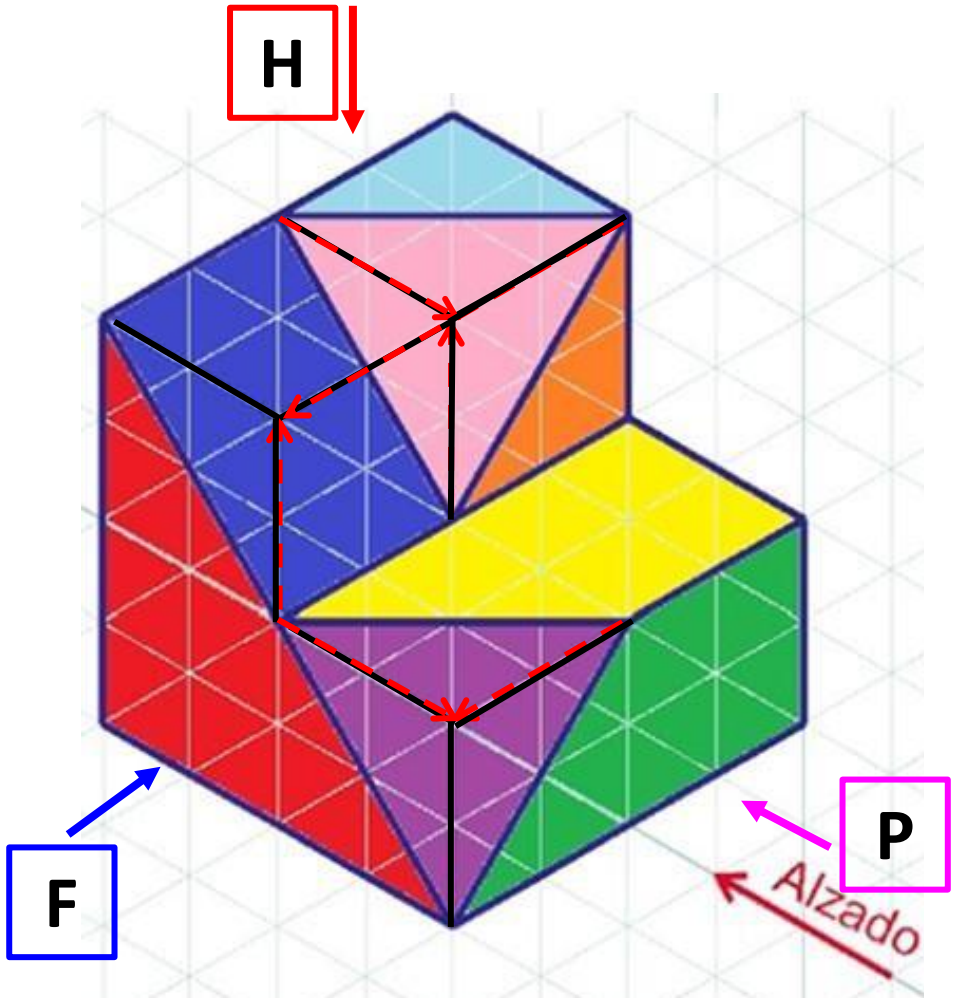
EJERCICIO N 03 Dibujar el DEPURADO del solido mostrado.

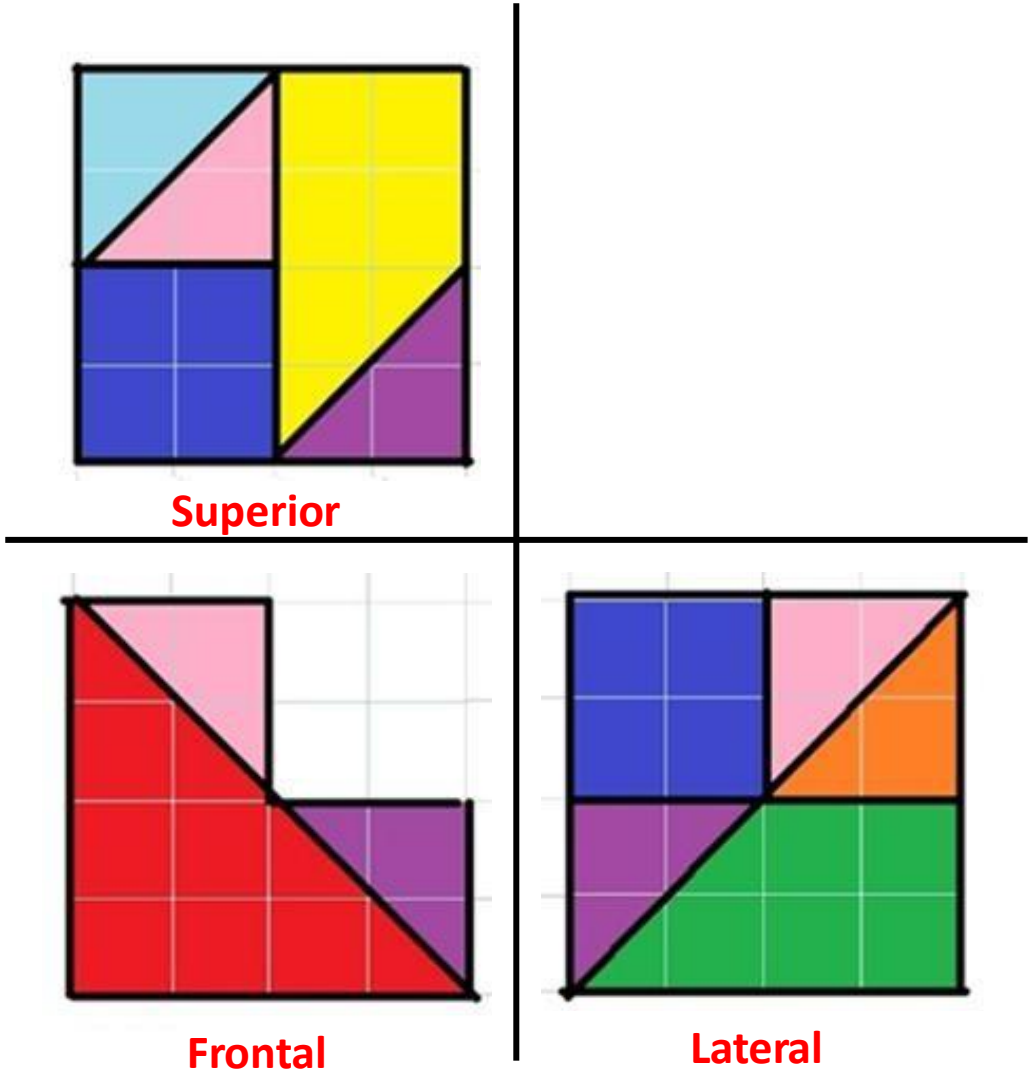




ANALISIS DE SOLIDOS

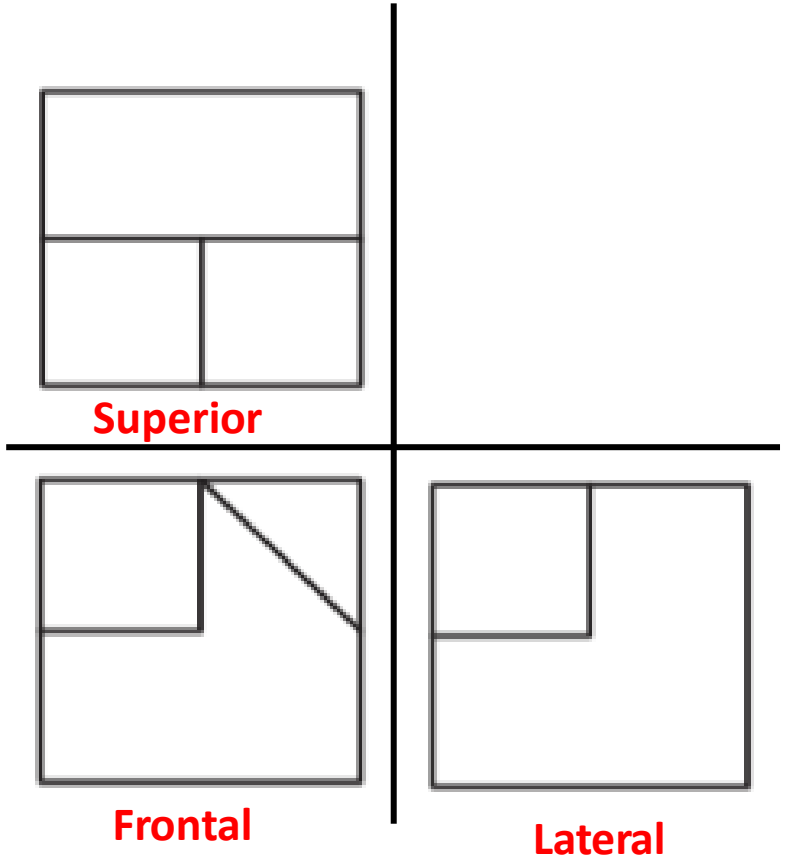
EJERCICIO N 04 Dibujar el DEPURADO del solido mostrado.

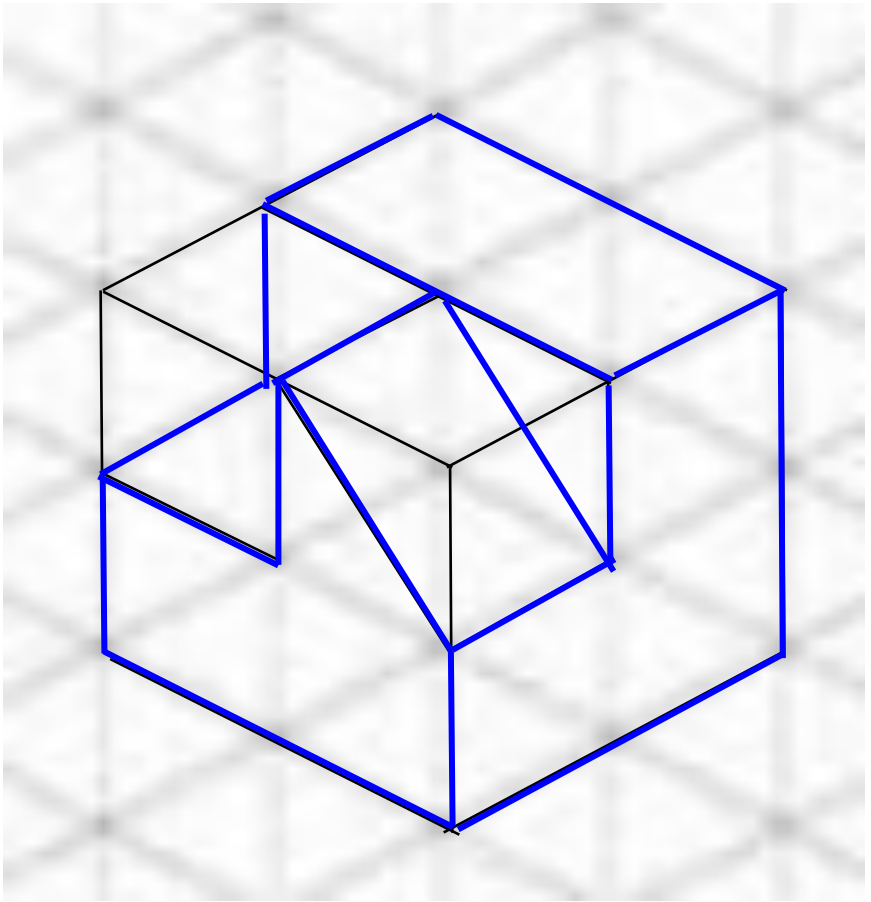




ANALISIS DE SOLIDOS

EJERCICIO N 05 Dado el DEPURADO de un solido, dibujar el solido

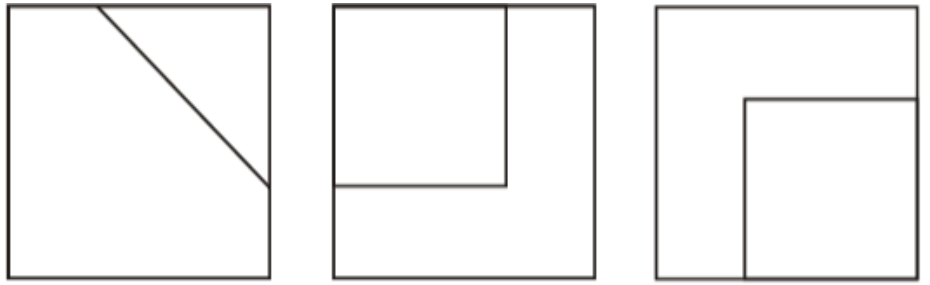




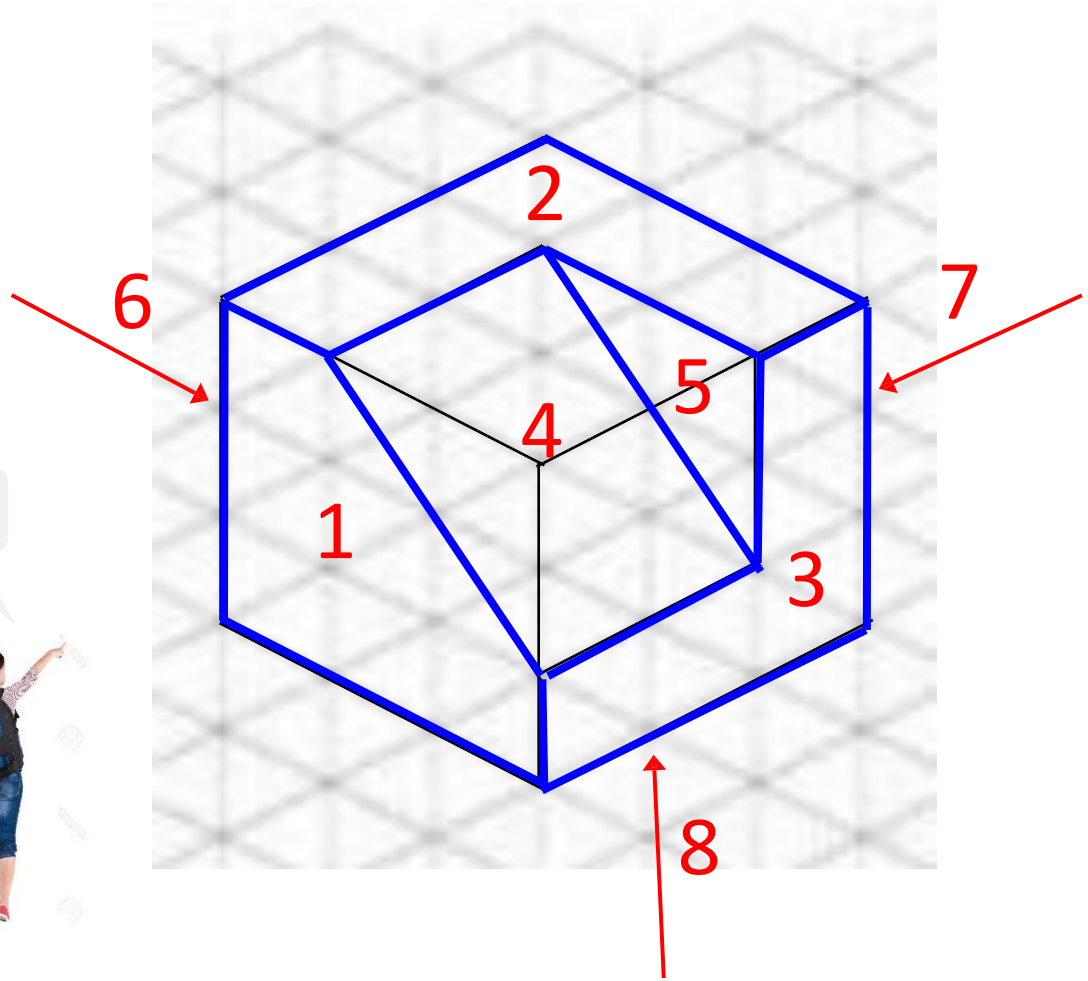
ANALISIS DE SOLIDOS

EJERCICIO N 06

Tres de las proyecciones de un sólido son perfil, frontal y planta. En la figura se muestran estas tres vistas. Luego de construir el sólido original, ¿cuántas caras tiene?

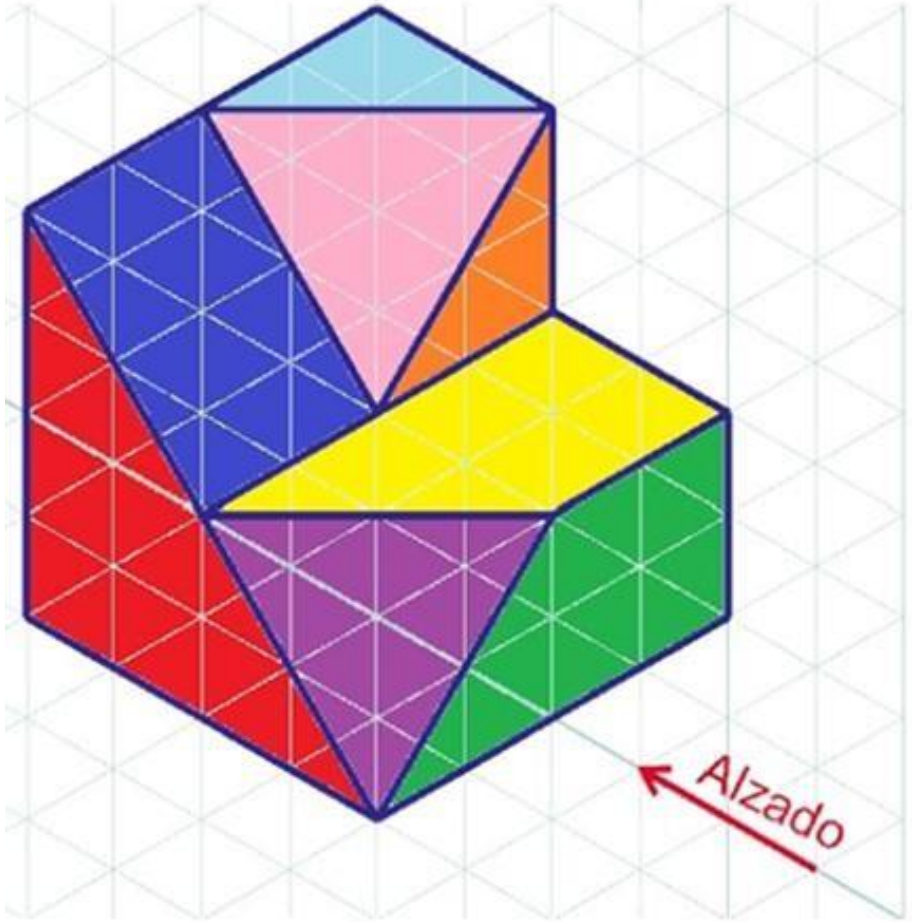


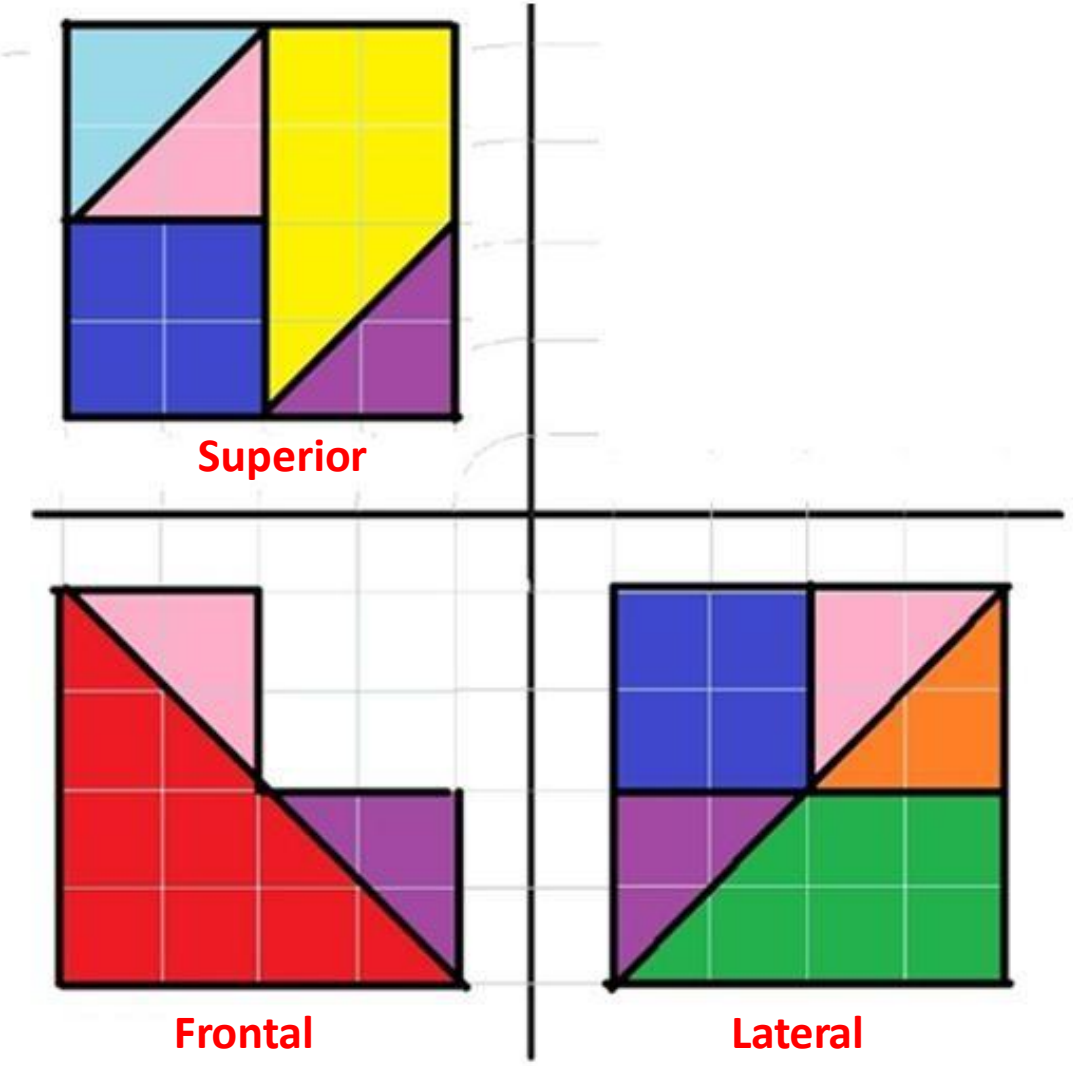
SOLUCIÓN



ANALISIS DE SOLIDOS

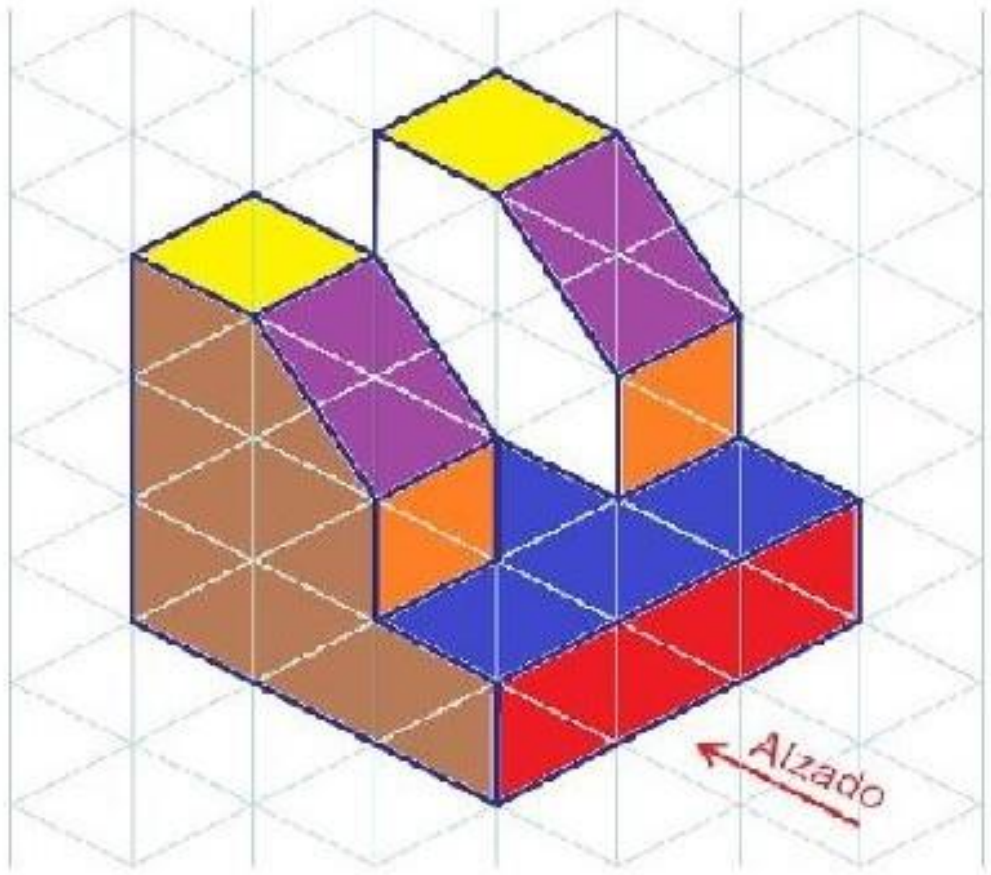
Ejemplo

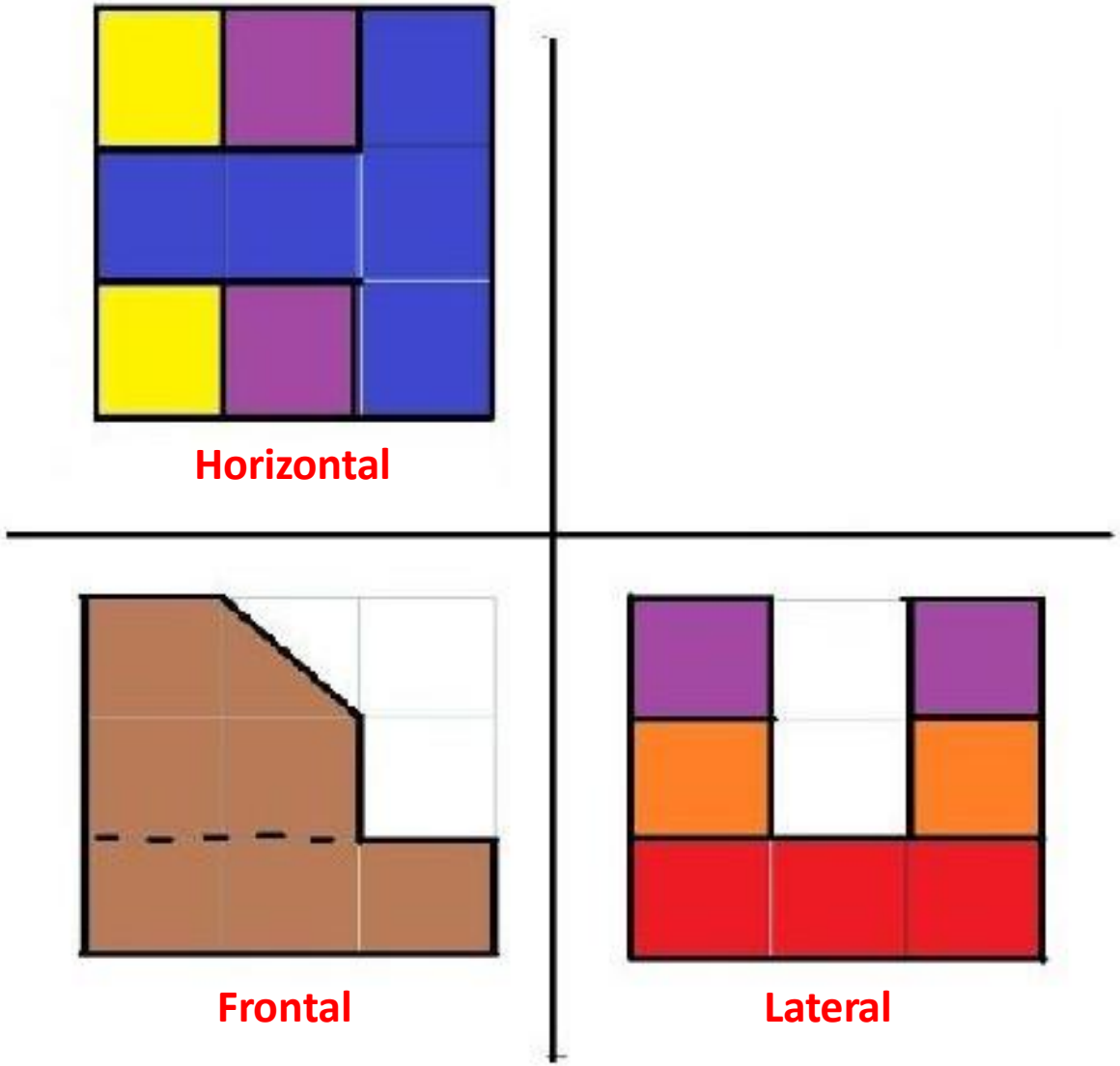




ANALISIS DE SOLIDOS

Ejemplo

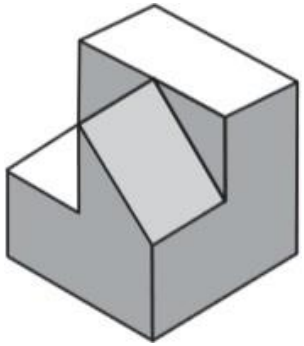




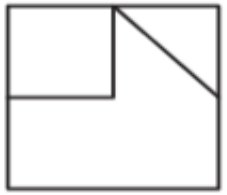
ANALISIS DE SOLIDOS

EJEMPLO

Marque la alternativa que no corresponde a una de las vistas principales del sólido mostrado



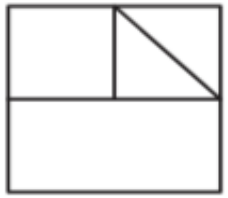
A)



B)

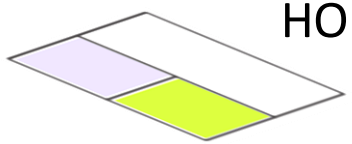
C)

D)



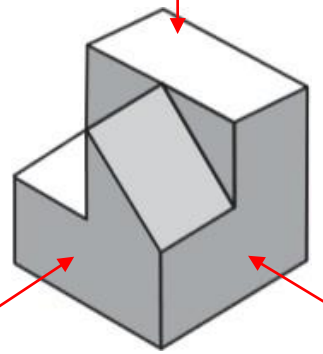
SOLUCIÓN

De las vistas del sólido, se deduce:



HORIZONTAL

B



La alternativa D no corresponde

FRONTAL

A

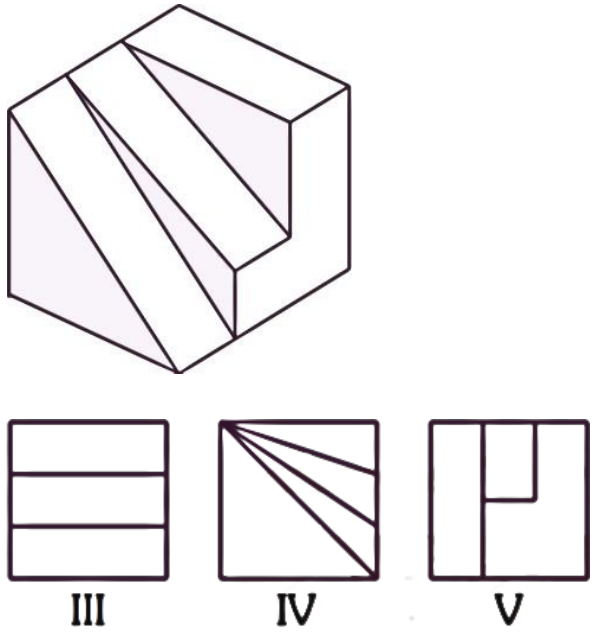
PERFIL

C

ANALISIS DE SOLIDOS

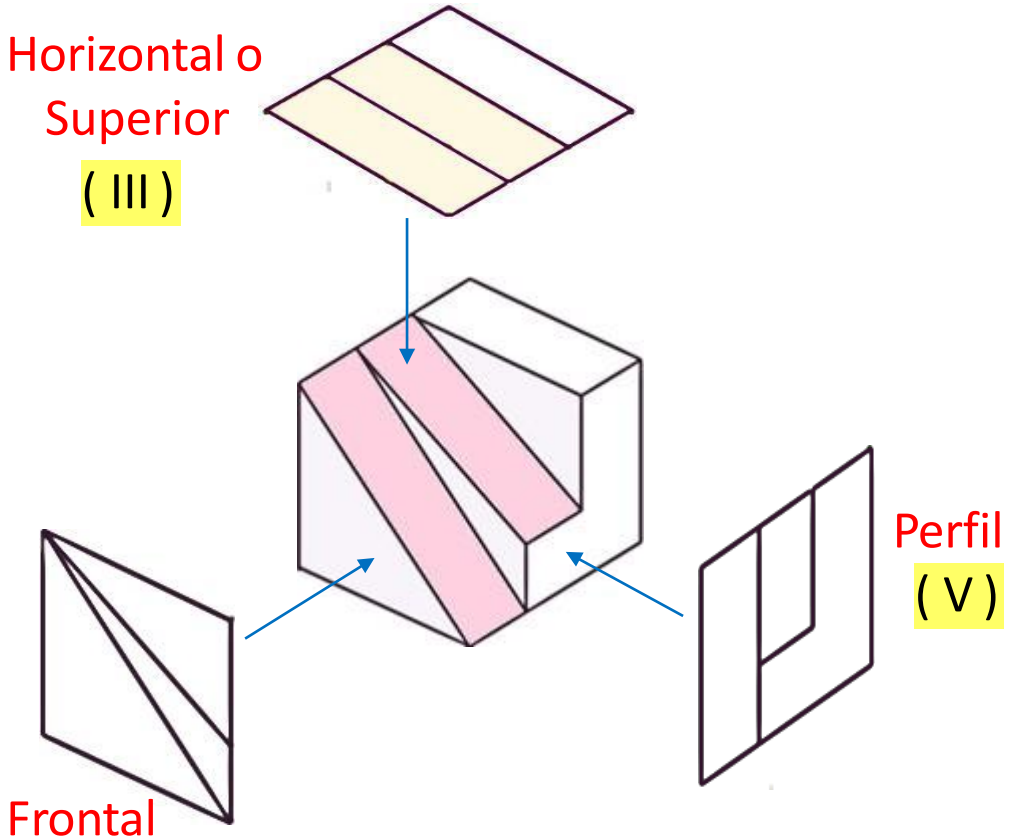
PROBLEMA 1

Señale la alternativa correcta, después de determinar las vistas que corresponden al sólido mostrado



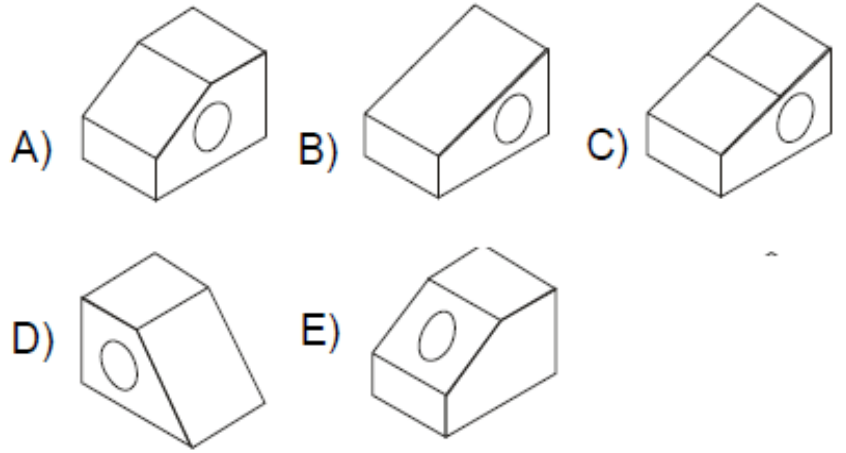
A) I, II y III
B) II, III y IV
C) II, III y V
D) I y II
E) II y IV

SOLUCIÓN Obteniendo las vistas del sólido



Las vistas que corresponden son:
II, III y V

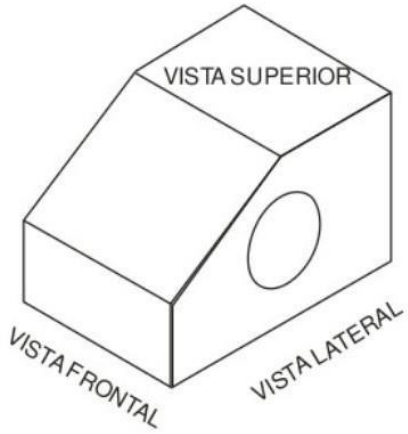
ANALISIS DE SOLIDOS



Un arquitecto hace un plano de las vistas, vista frontal, vista lateral y vista superior de un muro y luego lo manda a construir. ¿Cómo quedará el muro construido por el albañil?

Resolución:

Entonces el muro construido por el albañil será

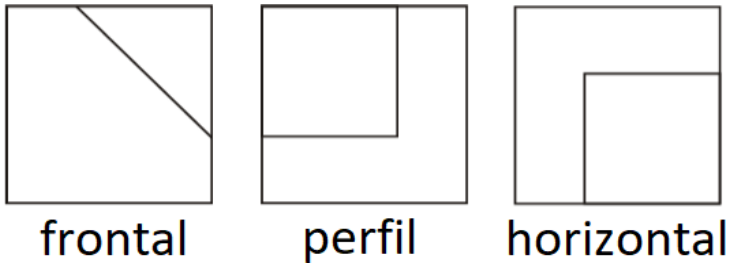


RPTA: "A"

ANALISIS DE SOLIDOS

PROBLEMA 2

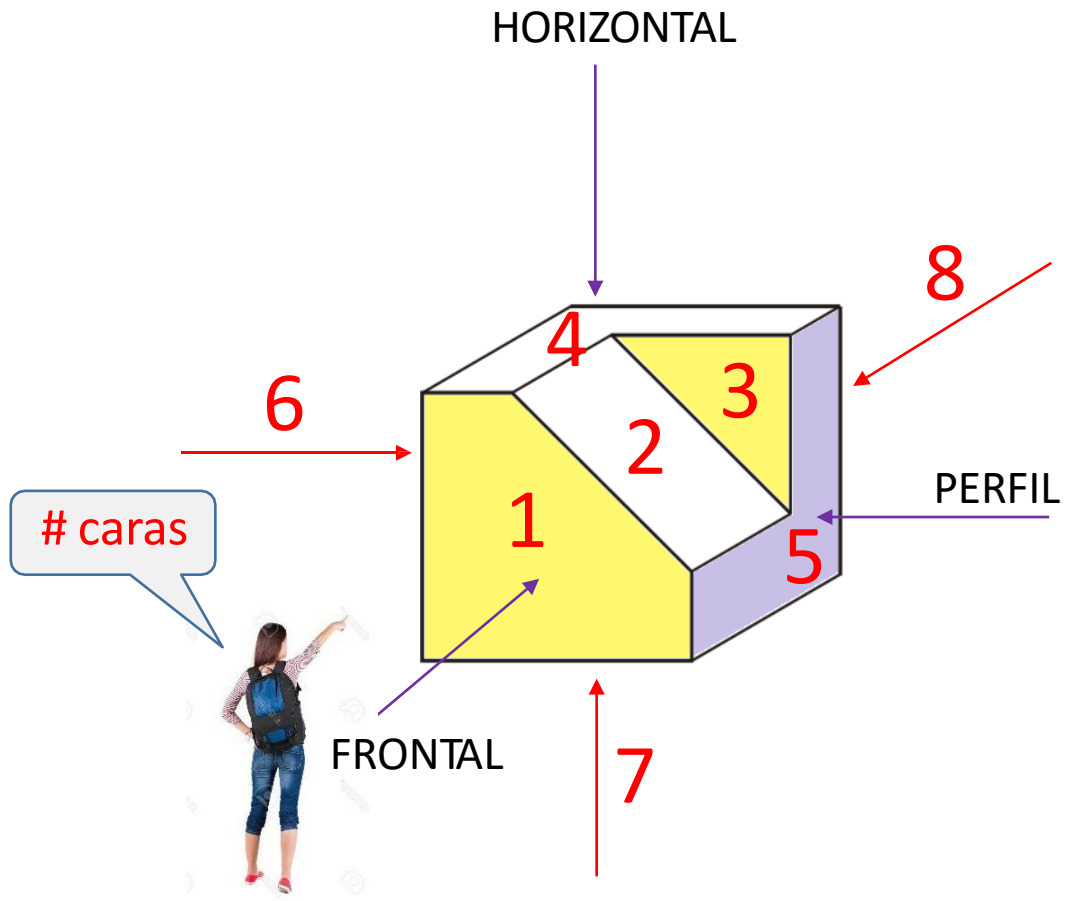
Tres de las proyecciones de un sólido son perfil, alzado y planta. En la figura se muestran estas tres vistas. Luego de construir el sólido original, ¿cuántas caras tiene?



A) 6 B) 7 C) 8 D) 9 E) 10

SOLUCIÓN

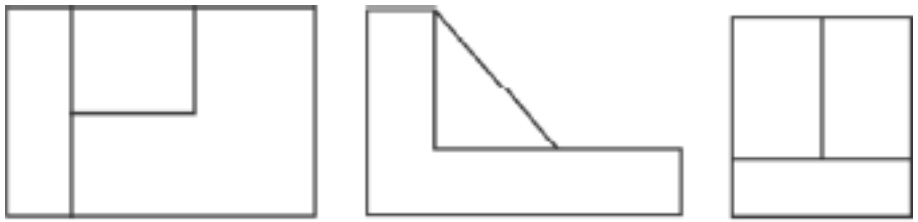
De las vistas del sólido, se construye



El sólido tiene **8 caras**

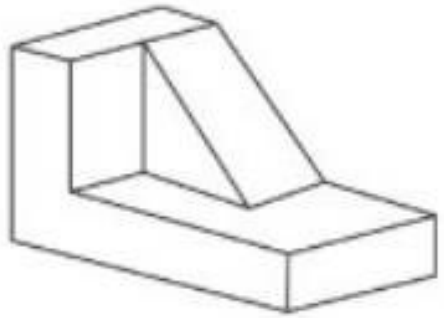
ANALISIS DE SOLIDOS

Ayme juega con plastilina y algunos moldes, luego obtiene un sólido y toma tres fotos. Su hermana Alison encuentra las imágenes y nota que si el sólido tuviera 4 caras menos este sería numéricamente igual a su edad. Calcule la edad, en años, de Alison



A) 6 B) 7 C) 10 D) 5 E) 8

Resolución:



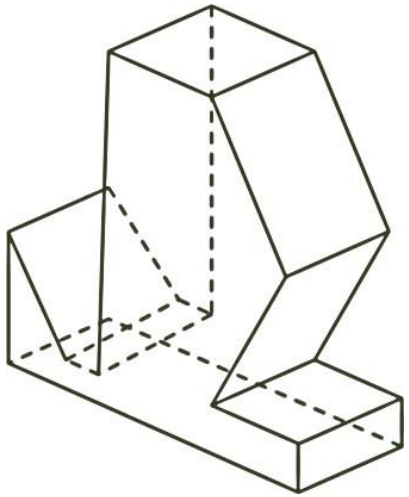
Número de lados = 10

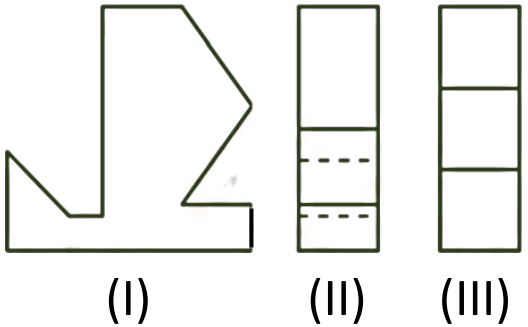
RPTA: "A"

ANALISIS DE SOLIDOS

PROBLEMA 3

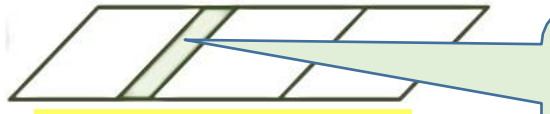
Señale la alternativa correcta, después de determinar la vista o las vistas que corresponden al sólido mostrado



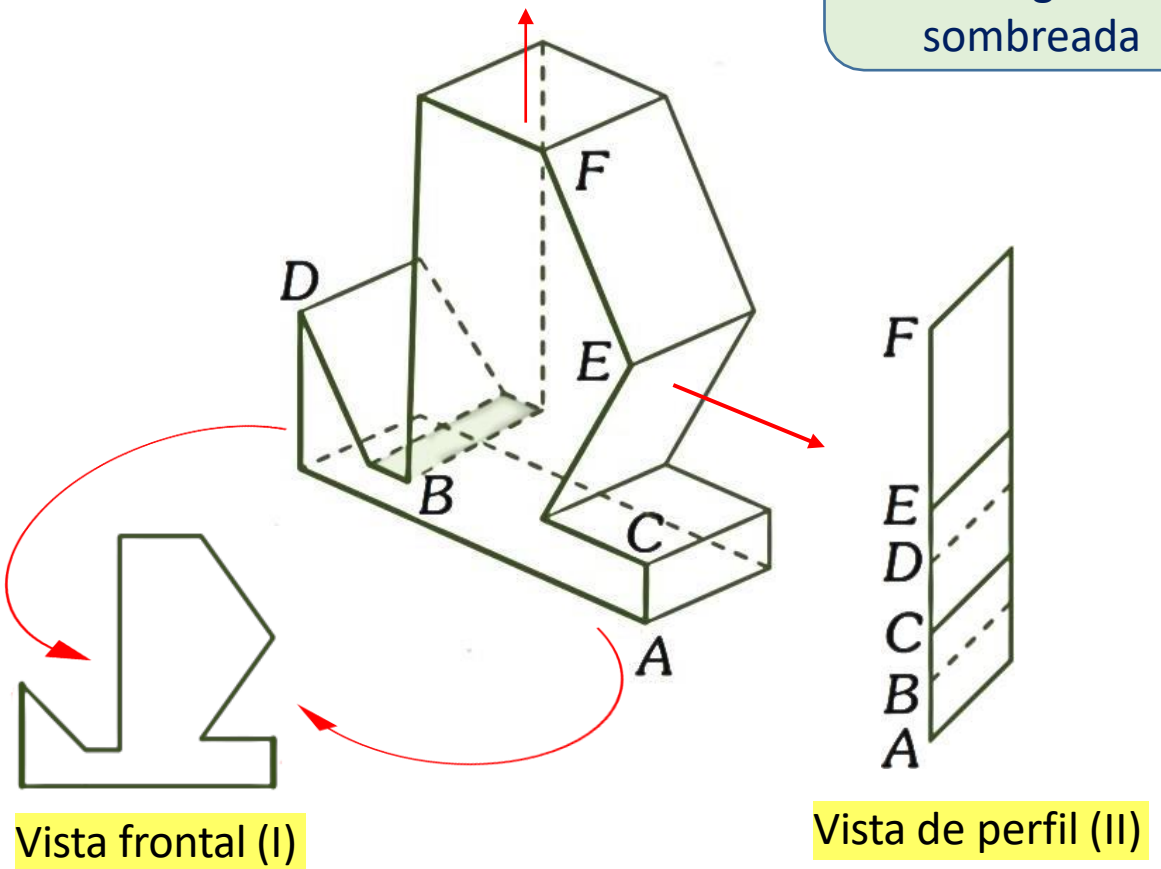


A) Sólo I B) Sólo II C) Sólo III D) I y II E) I , II y III

SOLUCIÓN Nos piden las vistas del sólido mostrado



A la figura III le falta representar la región sombreada

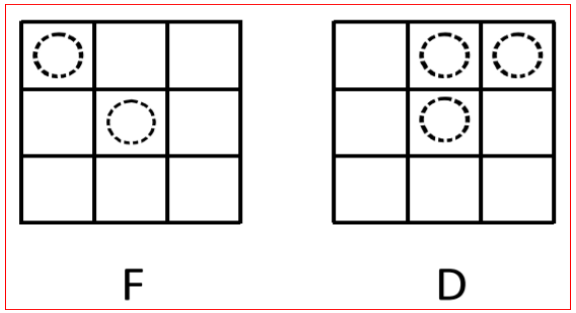


I y II son vistas del sólido

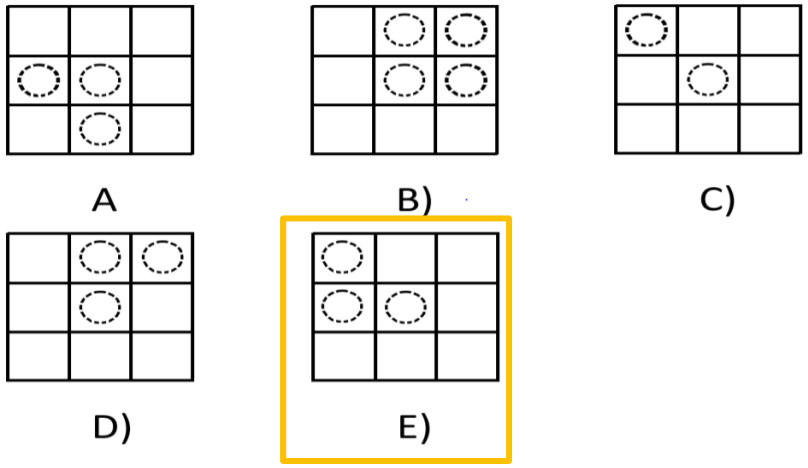
ANALISIS DE SOLIDOS

PROBLEMA 4

Un cubo está formado por 27 cubos pequeños, algunos de ellos contienen una esfera en su interior. La figura adjunta muestra la vista frontal (F) del cubo y la vista del lado derecho del cubo (D).

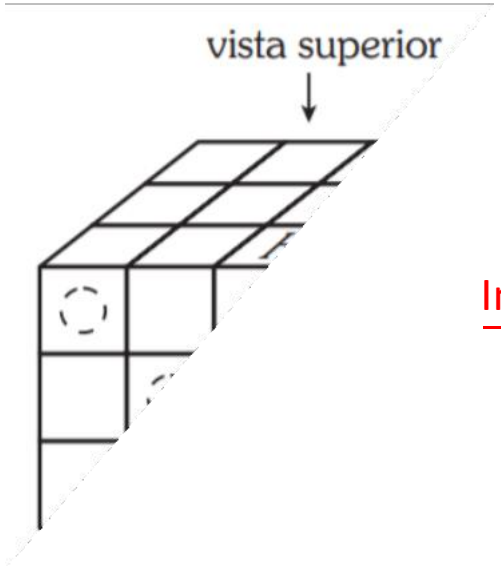


Determine la alternativa que corresponde a la vista superior del cubo.

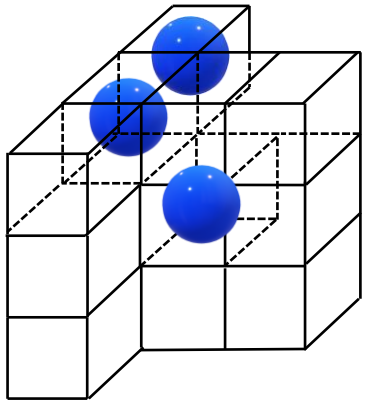


SOLUCIÓN

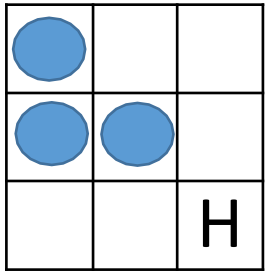
Nos piden las vista horizontal (H)



Intersectando las vistas



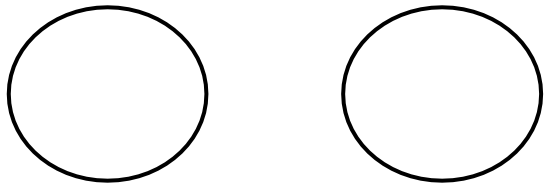
En la vista horizontal se verá:



ANALISIS DE SOLIDOS

PROBLEMA 5

El dibujo adjunto es una vista desde arriba. ¿A cuál de las siguientes figuras no representa?

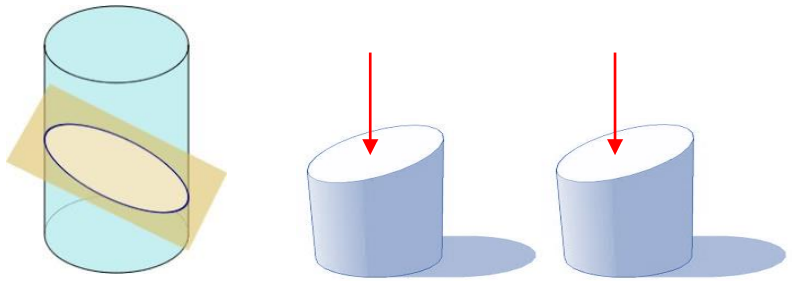


A) A un cilindro dividido por un plano oblicuo en dos partes
B) A un cilindro dividido longitudinalmente en dos partes
C) A dos esferas
D) A una esfera partida en dos partes iguales
E) A dos cilindros

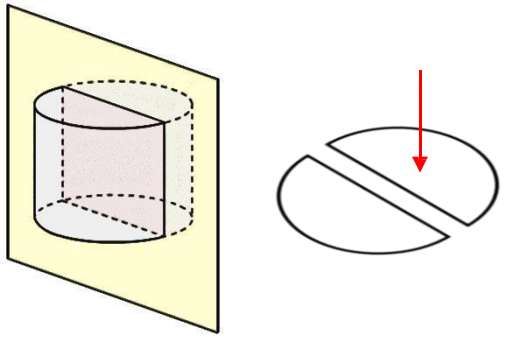
SOLUCIÓN

Analizando las alternativas

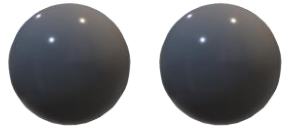
A) dividido por un plano oblicuo en dos partes



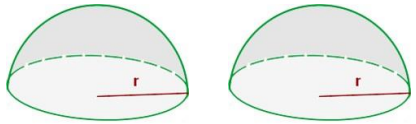
B) dividido longitudinalmente en dos partes



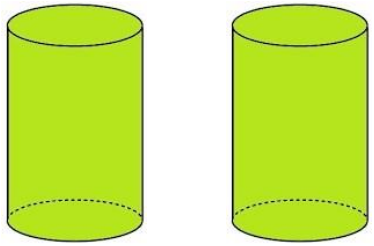
C) dos esferas



D) Esfera en 2 partes iguales



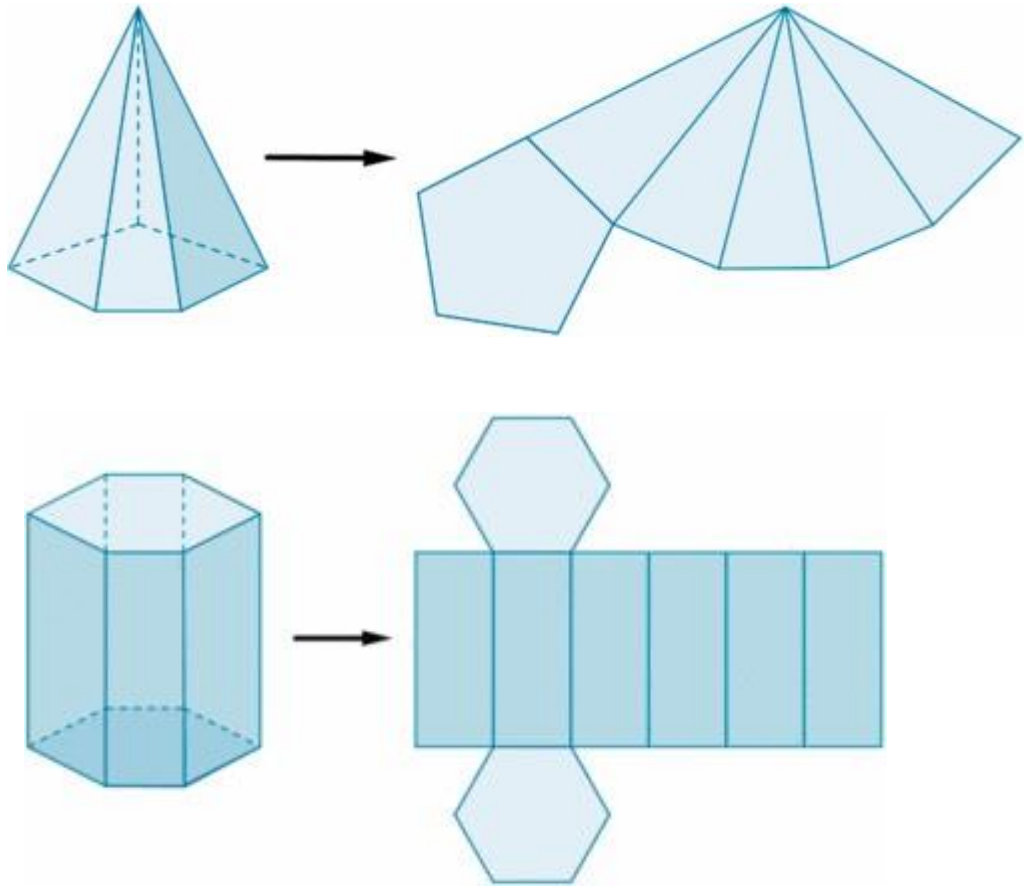
E) A dos cilindros



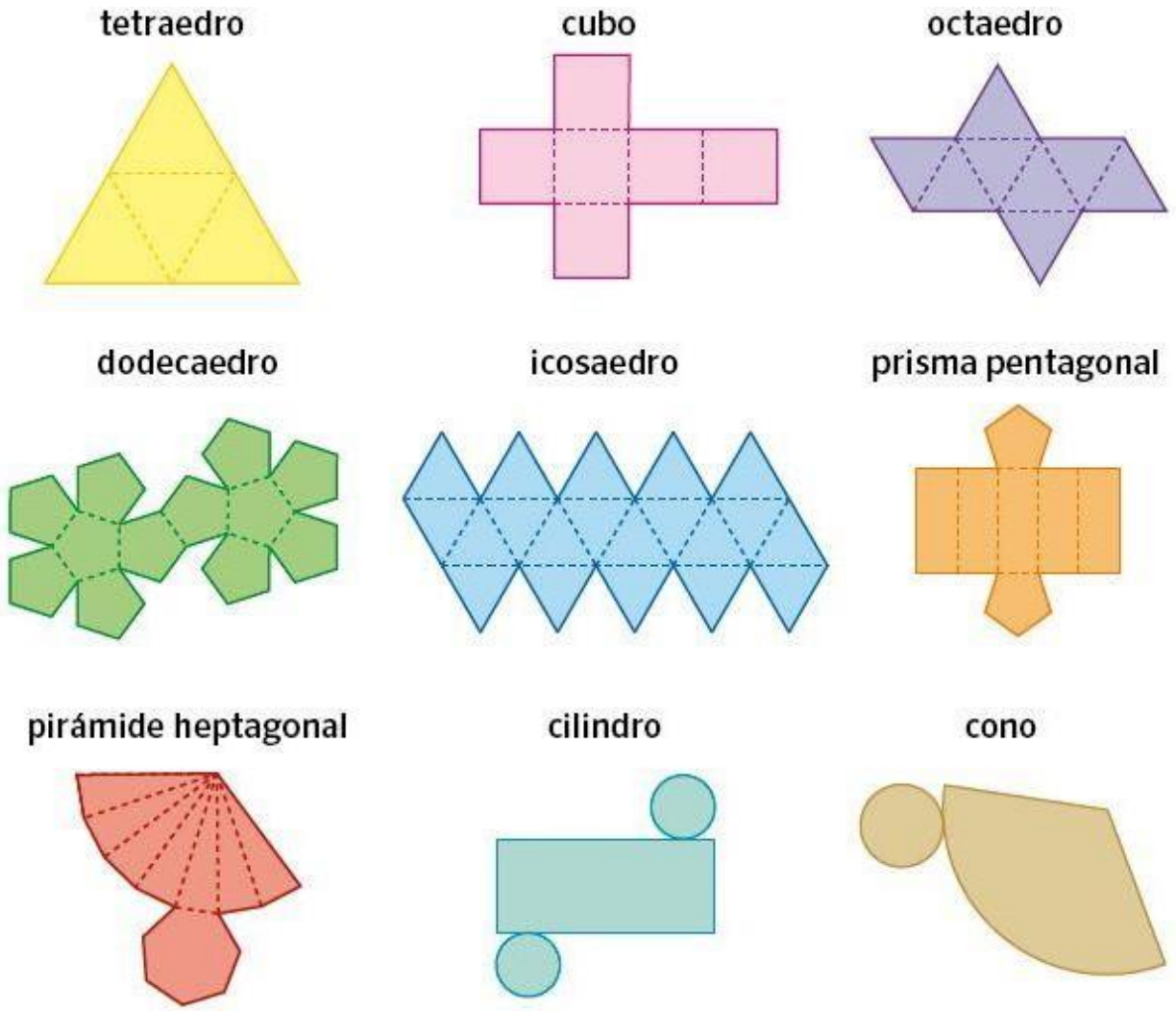
DESARROLLO DE UN SÓLIDO

¿En qué consiste?

Consiste en desdoblar la superficie de un sólido hasta extenderla en un plano

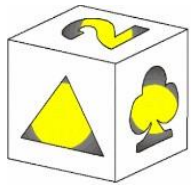


DESARROLLO DE LOS PRINCIPALES SÓLIDOS

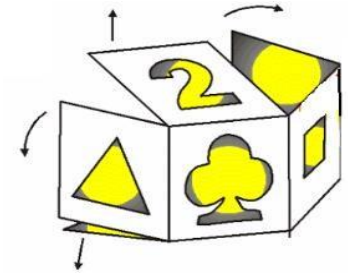


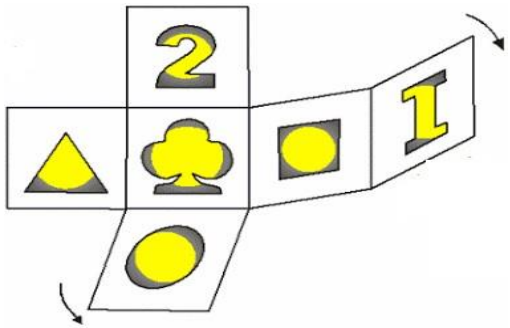
DESARROLLO DE UN HEXAEDRO REGULAR (CUBO)

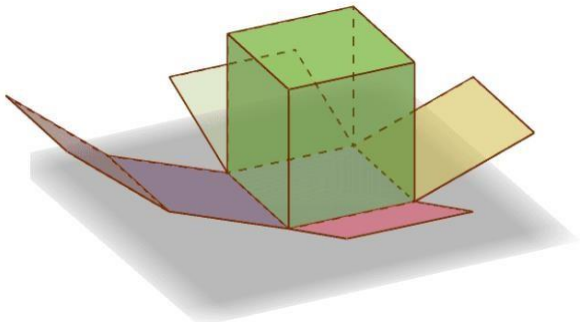
Desdoblemos el cubo mostrado



desdoblando

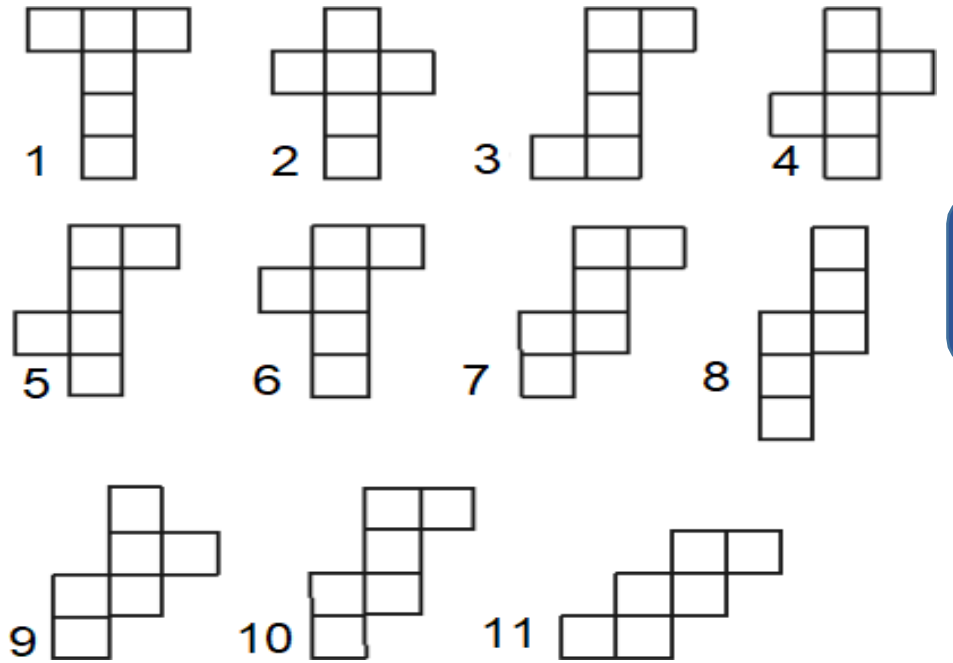






Al desplegar el cubo, este puede desdoblarse de 11 maneras distintas (HEXOMINO)

Desarrollos posibles de un cubo

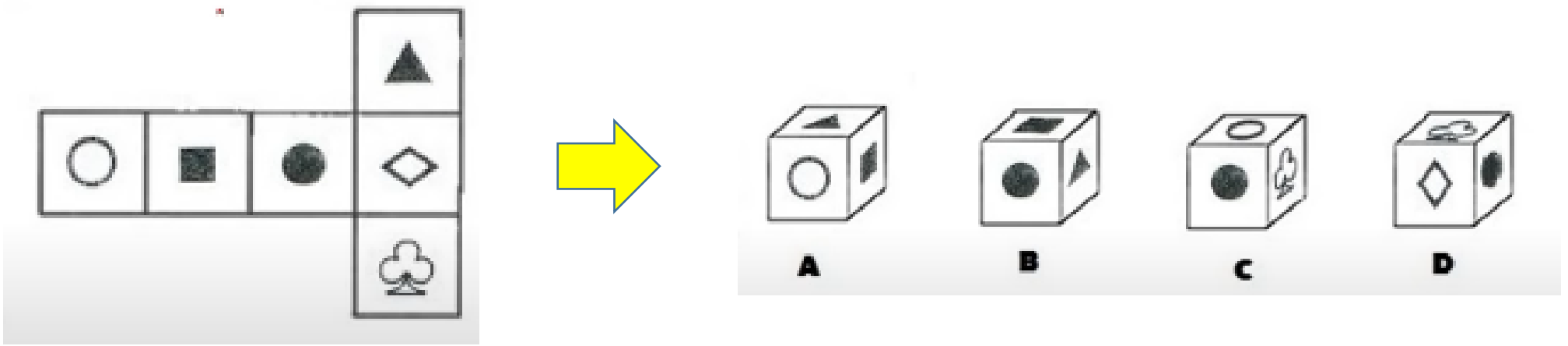


De 1 desarrollo es posible obtener los restantes

ANALISIS DE SOLIDOS

CUBOS DESPLEGADOS

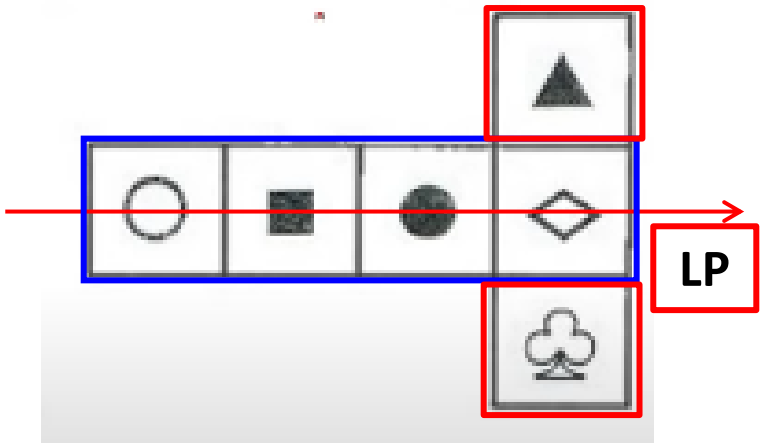
En la figura se muestra un cubo desplegado. Una vez que se vuelva a unir los pliegues indique en cual de las figuras quedaría convertida



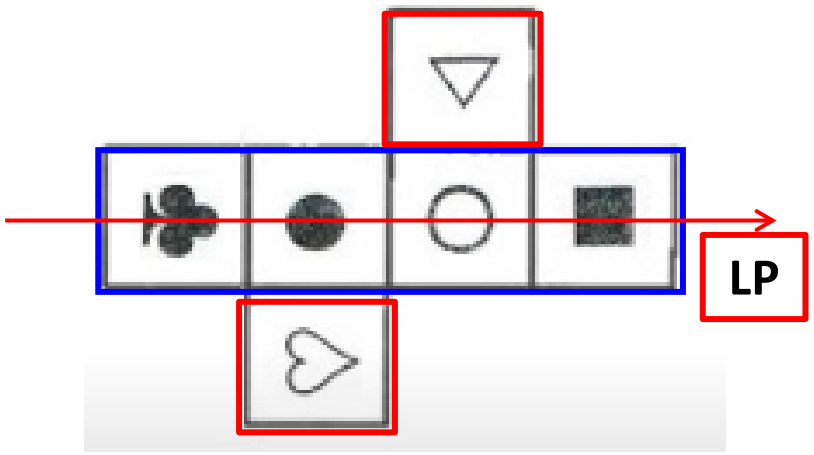
ANALISIS DE SOLIDOS

ELEMENTOS DE UN DESPLIEGUE

DESPLIEGUE TIPO 1



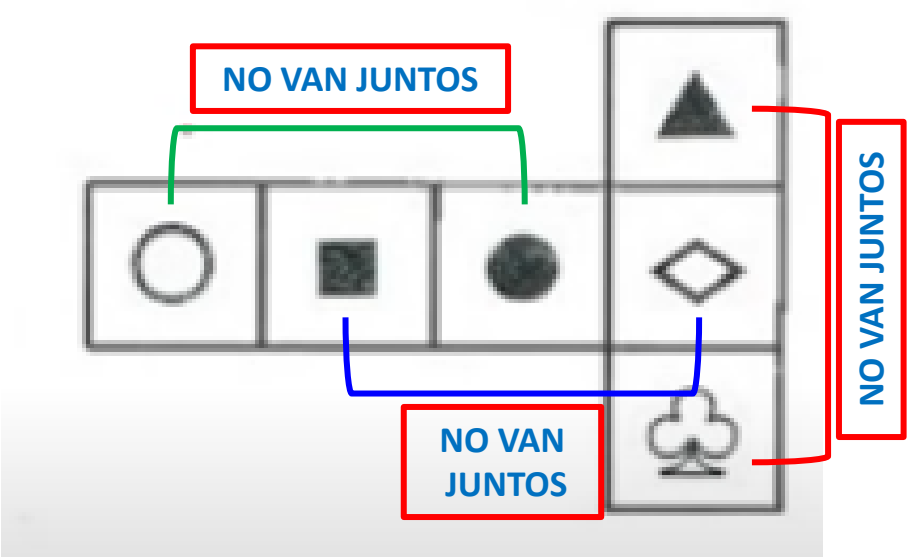
DESPLIEGUE TIPO 2



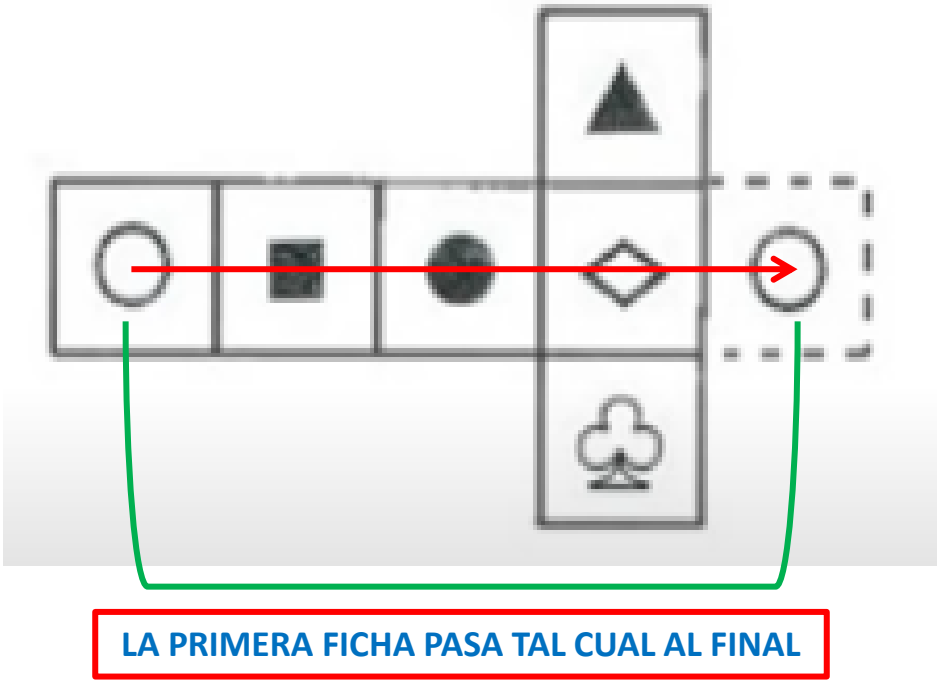
ANALISIS DE SOLIDOS

CRITERIOS PARA CUBOS DESPLEGADOS

PRIMER CRITERIO

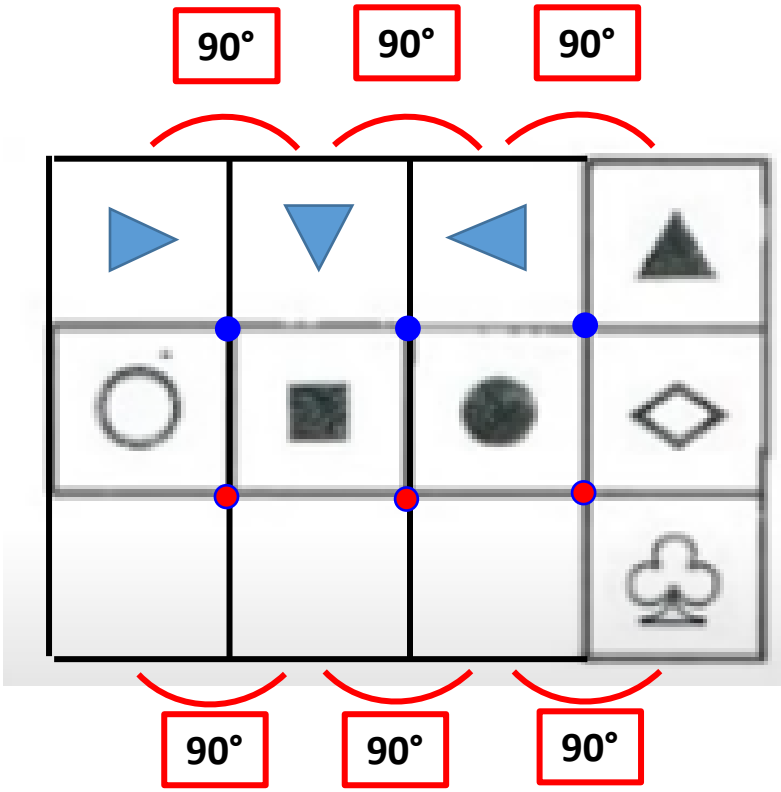


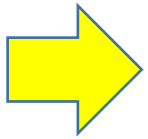
SEGUNDO CRITERIO

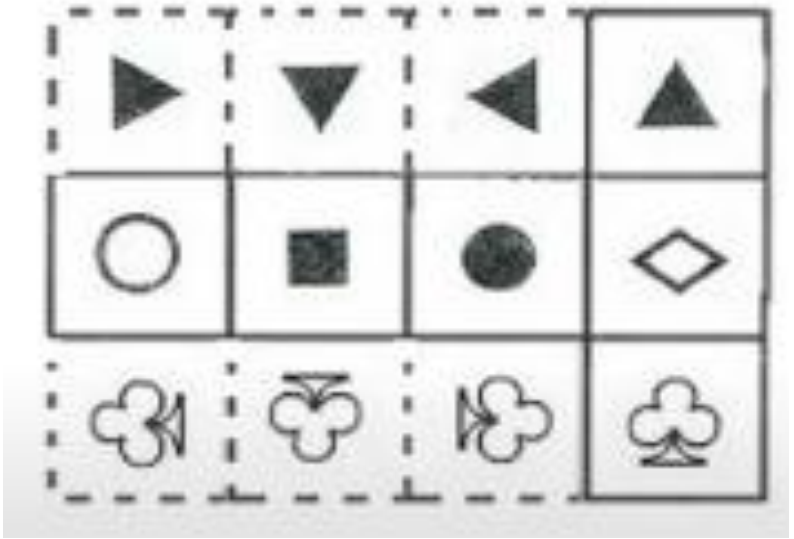


ANALISIS DE SOLIDOS

TERCER CRITERIO

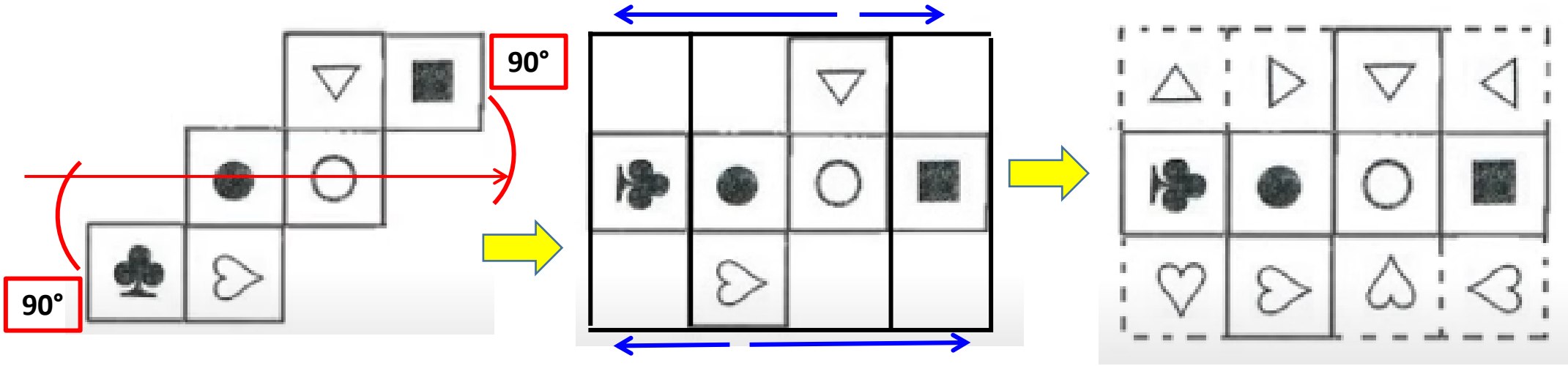






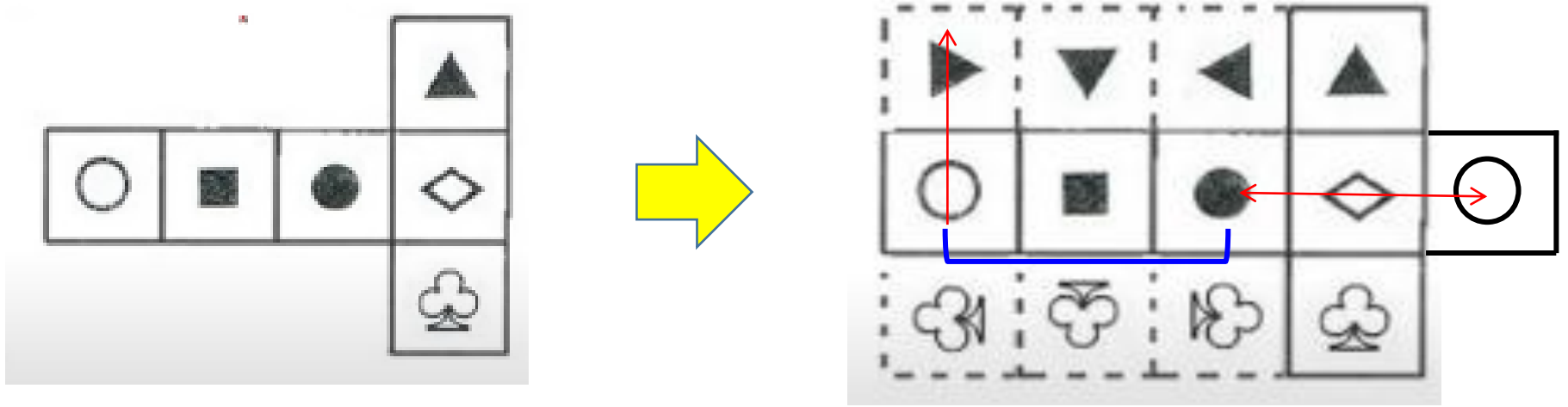
ANALISIS DE SOLIDOS

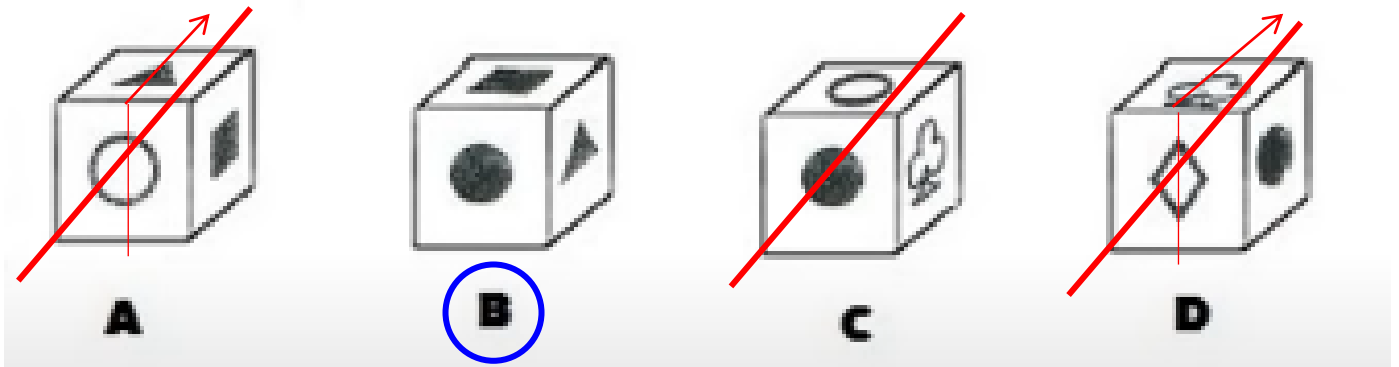
EJERCICIO APLICATIVO



ANALISIS DE SOLIDOS

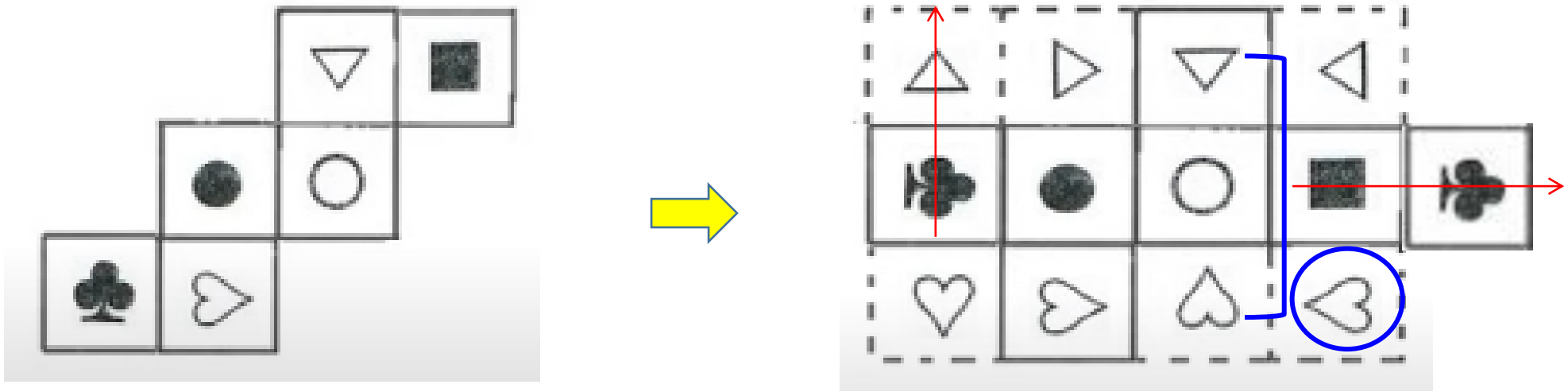
EJERCICIO 1 **Cuál de los cubos se origina plegando la figura**

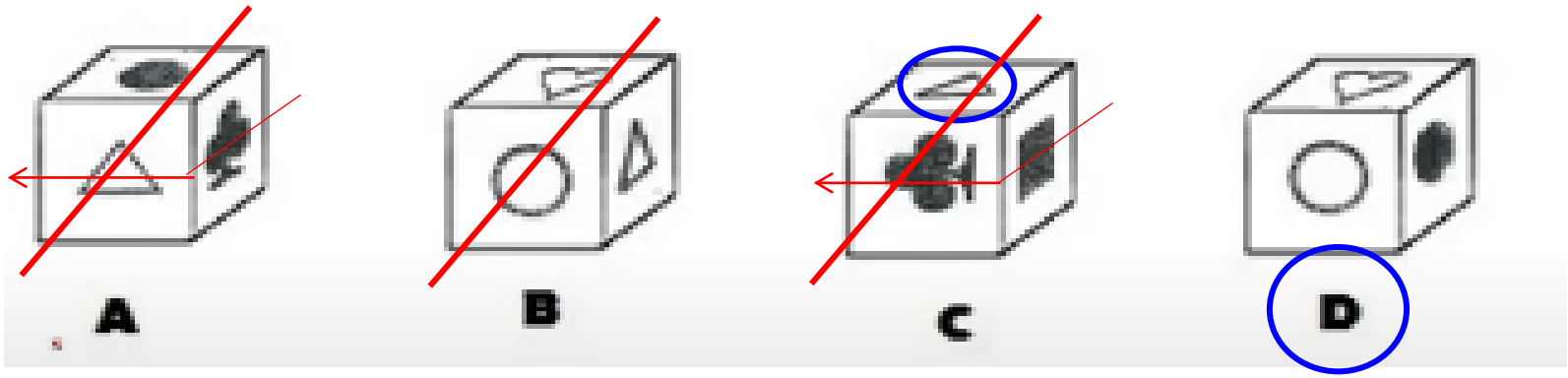




ANALISIS DE SOLIDOS

EJERCICIO 2 **Cuál de los cubos se origina plegando la figura**





FIN DE LA SESIÓN

PRACTICA Y APRENDERÁS